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Editorials

GOVERNMENT DICTATION OF MEDICAL PRACTICE HAS REACHED AN ALARMING STATE

Once a traveler in North Carolina alighted from his horse to help an old woman to fight a forest fire. His clothing was soon ablaze and the old lady, choked with smoke, made frantic signs at him. "My good woman," said he, "why do you object?" "I am not objecting, sir, I am telling you something." Like the old lady, we are telling you something which was perfectly apparent to some of us a decade or more ago and which should be positively apparent to every physician at the present time.

The tendency of the Federal Government is to extend its powers and activities far beyond the original purposes contemplated by the framers of the constitution.

The idea of Federal domination of medical practice as well as in other matters is being generally agitated by small but active factions in our country. The movement has reached an alarming strength. The unhappy omen is, that so many Americans are utterly unaware that this movement indicates that there is to be an essential change in our form of government.

The danger which every republic should fear is overcentralization, with the subsequent substitution of domination by one man for the rule of the people. Germany is the historic symbol of absolutism. We have just concluded a war, undertaken, we are told, that democracy might not perish from the earth. If this is true, to attempt to centralize in Washington the management of affairs that rightfully belong to the respective states is to create a system which cannot but destroy democracy among our people by betrayal of principles which are the fundamentals for the maintenance of government.

The centralization of power, whether in industry, commerce, education or the trade or professions or other factors entering into affairs of our everyday life amounts to this: That if we

grant to an individual the power to make standard or be the sole authority to revise, abolish or fix conditions under which the people of the future have to live, work and be educated we set up an oligarchy which will create and foster bolshevism.

Another tendency is to foist bureaucratic institutions upon the people with its added swarms of employees. Such swarms are bad enough wherever found, but in the management of government practice of medicine will be fatal to the interests of the people.

Personal freedom is in danger, and personal freedom is an essential condition for progress in society. Government ownership of anything tends to shackle freedom. The balls and chains on the hands and feet of a convict in prison are quite bearable in comparison with the shackles which government practice of medicine would forge upon members of society.

Bureaucratic administration and government practice of medicine will mean compulsory shifting of duties proper to the individual to a subsidized governmental agency and this in the end will destroy the initiative, self-reliance and independence, without which democracy generates into autocracy.

Socialistic schemes, such as health insurance, state medicine, lay distribution of medicine and other intended set-ups for the control of medicine would be the opening for the thousands of similar laws that would follow. In a short time after the enactment of initial ones the government would be embarking wholesale in enterprises for which no constitutional bill of rights exists, and which forthwith establishes a socialistic state. And where would it all end? We know where it ended in ruined Russia. Are we a people so favored that we can sow the wind and fail to reap the whirlwind, that we can play with pitch and elude defilement; set in motion efficient causes and escape effects; establish a system of autocracy embracing every human activity and continue to be a nation of free people—a republic—an indestructive union of indestructible states?

Parliament, it has been said, is omnipotent, but even parliament cannot create adjacent hills without intervening valleys. Can the people of America set up industrial autocracy in Washington without resulting industrial slavery? Perhaps, but only in those idyllic days when the lion and the lamb lie down together and when without restraint the festive cow (?) shall vault over the silvery moon, and everywhere by act of congress, five is the sum of two plus two.

One hundred years ago the signers of the Declaration of Independence, the framers of our National Constitution, never dreamed of the possibility of the federalization of everything in the United States. Today we are facing the federalization of medicine as exemplified in the Sheppard-Towner Bill, the federalized school as represented by the Smith-Towner Bill and these, if enacted, will be followed by and used as justification for the federalized church or federalized method of worship and of all details of daily life.

Medical men should be wise to the situation. The current of present-day social talk is strong for federalized medicine. The movement must be headed off or directed rightly. It is part of social wisdom to erect breakwaters which will deflect erring currents into socially useful channels.

Before the movement gains further headway the medical profession as well as the public should be brought to a realization of the harmful influences resulting from the establishment of a bureaucratic form of government.

The medical profession should unitedly vigorously oppose any and every scheme brought forward which is intended to fix with practical irrevocability essential changes in the management of our every-day affairs for the good and sufficient reason that the welfare of generations of Americans yet unborn and the future efficiency of medical practice hang in the balance.

With Senator William H. King of Utah (congressional record Feb. 10th, 1921) we agree "that the struggle is now on between the consolidated and powerful Federal Government, dominated by bureaucratic forces, and the rights of the people as individuals, as the sources of power and authority, and the rights of local communities and of the states themselves. And the voices that should be strong for local self government, for personal liberty, for freedom, and for those principles and policies that make a strong and democratic people, seem to be silent, and the strident cries of the centralized forces in the land either frightened the people into submissiveness, or win them to the acceptance of dangerous and destructive policies.

What we need now is a leader who will arouse

the people to the necessity of putting hooks in the jaws of the federal government and of reviving the spirit of personal independence and local self government which inspired our fathers in the days of the revolution. . . . I wish a crusade would be inaugurated in all parts of the land against the accursed spirit of bureaucracy and paternalism. . . . Congress is becoming so impotent that many believe . . . we sit in this chamber merely to O. K. bills prepared by government officials. It has been charged that we lack courage to support the charge."

For two decades we have fought persistently and consistently against an overcentralized government in Washington, against the lay dictation of practice of medicine, and against the encroachment of the United States Government into the practice of medicine in fields other than prevention of disease. If democracy (as well as industry and medicine) is to survive these evils must be stopped. Already we have built up in the United States a most dangerous form of tyranny, a meddling paternalism that knows no master. Of the scores of paternalistic bills threatening Washington it is meet to note that Senator Borah has said:

"The course we are now pursuing will prove in the long run more dangerous to our government than a foreign foe." Senator Borah further said: "A proud strong Nation may suffer a reverse in arms but time may still find it triumphant. An independent and self-reliant people may be overcome by the fortunes of war, but time fights on their side to final victory. But a nation whose citizenship has been drugged and debauched by subsidies and gratuities and bonuses, who have surrendered to the excesses of a treasury orgy has taken the road over which no nation has ever yet been able to effect a successful retreat."

Politics, led by loud voiced self styled friends of the people is making steady inroads into every activity, and there is going to be only one outcome. The whole practical progress of the country is going to slow down. A certain type of politician gets office and power by demanding laws or government action for every ache any one of us has. But American progress and prosperity have been maintained not by government or politicians but often in spite of them. They are the product of the free energy, initiative, and intelligence of private enterprises, and we barter our birthright for a mess of pottage if we turn from that wise policy to government aid, bureaucracy and political officialdom. We have no excuse for making such a blunder, for the latter system has been demonstrated in the old world and is one of its chief burdens today.

Repeating what we have preached in this Journal and elsewhere for twenty years, we still believe in the essential virtues—self reliance, thrift, subordination of expediency to righteousness.

We have no sympathy with paternalism or undue dependence on the *Grand*motherly state, either in medical or commercial affairs. We resent Governmental meddling in private affairs. We are a staunch supporter not only of state rights but of local autonomy, of local initiative, of neighborly co-operation. We admire the original plan of town government, a government of the citizens and by the citizens.

MEDICAL ECONOMICS HAVE BECOME A NATIONAL PROBLEM

Thoroughly aware that conditions in medical economics were bordering on chaos, allied interests in 1917 laid the foundation for that well publicized group of investigative and research workers that has come to be known as The Committee on the Costs of Medical Care. Supported as it is in large degree by private interests and foundations the group carrying on this survey of medical economics has among its personnel representatives of private practitioners, public health service, institutions with special interests, the social sciences and the public at large. Yet some of the findings have lain peculiarly along those essential lines that medicine must pursue to save itself and its constituency from the menace of socialism as vested in state medicine, working through paternalism, and alive through advertising.

One of the activities indicated at the outset as a logical inference from the findings of this committee is that it behooves every medical organization, association and society to maintain a well organized department of public relations. The public itself must be educated through a constructive publicity program of the relationship of medical science and the general public and their requisite united front of defense against the lay interferer and the charlatan.

Among other angles for this necessity is the revelation, unconscious though it be, in the committee's finding of the extent to which paternalism is undermining the backbone of the good Americanism.

Glance but a moment on the significant item of ultra paternalism in the workings of many employers. The Johnson-Endicott Shoe company is among those paramount. Costs of full medical care to the employe is there carried by the employer without wage deduction and at a rate of $21.80 per annum. This is an example of the latest adventure of those philanthropists who began their medical interference first by contributing liberally to regular medical institutions and who proceed to the idea of having a little hospital of their own. This paternalistic attitude at the outset deceives even the donors themselves. Recognizing the value of better medical service to its employes, industry, to do it justice, is not so much trying to run the practice of medicine perhaps as to squeeze the last ounce of healthful and efficient labor from its payroll. To that end the laborer, if worthy of his hire must also be kept worthy of his work by health. But why this should be done at the expense of the medical profession is another theory for Einstein to formulate.

One employer said frankly according to an undisputed authority, "Industry is not rendering medical service to employes because of our espousal of paternalistic doctrines, BUT BECAUSE IT HAS BEEN PROVEN BEYOND A REASONABLE DOUBT THAT FULL HEALTH SERVICE TO EMPLOYEES IS GOOD BUSINESS AND PRODUCTIVE OF FINANCIAL RETURNS TO INDUSTRY, TO SAY NOTHING OF THE ADVANTAGES TO THE EMPLOYEE AND HIS FAMILY." In defense of this attitude industry complains that doctors who can cope efficiently with medical problems are unavailable. In this the survey finds there is element for justification. Medical schools in their current re-adjustment should incorporate a department for training students in medical insurance and commercial economics, and for getting the public in line with the medical idea.

Insurance companies, with their ear ever to the ground as is the habit of those who deal with one eye on finance and less than half of one on humanitarianism, are on the alert for the possibilities of forced future health insurance. One company has gone so far as to prepare elaborate data that is an eye-opener to the men asleep at the prescription desk.

It is set forth also that practicing in competition with other ethical physicians there are in this country about 150 private group clinics, the majority of which function in the Middle West. Chicago is well beset. There are innumerable cults, paths, religions and isms and practically pure commercial practitioners besetting the path of efficient medical practice to the detriment of public welfare. And none of these are cramped in self eulogy, nor behind hand in the ways of advantageous economics.

Medical economics have become a national problem. If the doctors offer no solution, the laity will. It is not enough that organized medicine shall be on the defense. The need for it to offer is co-operative defense. The public is the plaintiff or thinks it is, and feels that its antagonism to the medical profession is well justified. Oddly enough the profession itself is the last group in the world to sense this antagonism.

Medical economics needs two things. First general dissemination of medical conditions today and secondly organized and definite leadership to bring about a way to set things right.

THE PROBLEM OF TUBERCULOSIS IN YOUNG GIRLS AND THE WORKING PERIOD IN MEN

Tuberculosis, or the white death, both loves and gets its shining mark. Deaths from tuberculosis in Illinois in females affords one of the staggering classes of excess mortality. Not only are the figures quite out of bounds in themselves, but they are far too much greater than pro rata figures for men.

Especially is this true of the statistics of the group of females between 14 and 30 years of age. In this group according to the state survey the rate among girls and women between the years of 10 and 35 is forty-two per cent. greater than it is between the male sex of the same age group. Now speaking generally the ravages of consumption or tuberculosis have declined, among all other age and sex groups. Since

tuberculosis is one of the most sensitive indexes to the way of living in hygienic error, it is vital to public welfare that a program shall be arranged to conform to the methods of combating this inroad into this especial group. Fads in food, in dress and in the general type of physique have been discovered to predispose to tuberculosis. So also is the inevitable biological function of women, Nature's continuous curse upon the sex.

Research shows plainly that the exercise of menstruation creates a physical condition particularly favorable to tuberculosis. Laziness, ineptness, lessened physical vigor on those occasions is not a whim but a warning.

There is no doubt but that modes of dress in women at the present day, rather than installing a "hardening" program lead to much illness. It is surely not right that girls of from six to 12 years shall go through the severity of winter in climates of that section of the temperate zone chiefly occupied by the United States. If the biologic function is responsible for conditions leading to increase of tuberculosis in this group of girls and women it would seem feasible that some attention be paid to the pre-biologic age. We have all of us seen girls ranging in age from eight to twelve or even older, with limbs almost as long and certainly as thick as many a matron with the entire leg bare from the lower calf where the sock top ends to the very brief bloomer or short coming scarcely more than two inches below the hip bones, and in the most extreme and picturesque of the modes cut so as to slide over the hip bone. The frock and perhaps brief petticoat worn with such garb are cut so as to end anywheres on even line with the lower genitals to perhaps two inches above the knee. To be smart the youngster, especially under seven must wear the briefer garment.

Supposedly long leggings and a short reefer are added to this costume in frostiest weather but there are days and days and weeks and weeks when children, especially little girls, thus clad are to be seen in public thoroughfares, the tender flesh of their young bodies red and empurpled with chill. Kidney, bladder and pelvic ailments can and do result from such exposure as surveys show. It is not intended to go into those affections here. Enough then to say that while tuberculosis results not from exposure to cold but to direct infection or contagion that the impaired vitality resulting from such improper mode of apparel drain and plow the field for the sowing of the seeds of the dread scourge.

In the immediate pre-menstrual age such lack of care predisposes to an ailing sex life with the resultant horror of a diseased sexual system and its consequent mental and social lack of balance.

Nor does the hand of encouragement to tuberculosis stop there. The bare legged, in truth the bare buttocks fad for children finds rare compliment in the would be sylphlike forms with which now all women from ten years upwards would face the world.

Obesity is a dread destination. No physician would wish that enemy upon his own or upon any other patient. But the reducing fad is worse by far than the dead and gone mode of "tight lacing."

Though ladies might lace, they still could eat. It was all just a matter of drawing the stay-strings tighter. Now all that is changed. Upon a fat-free, restricted and curtailed diet the world of women would walk and win. Here the perfect paradox has out paradoxed itself. Malnutrition is one of the commonest causes of predisposition to tuberculosis.

This malnutrition is a child of many fathers. Lack of nourishing food is probably the chief villain. But it must not be forgotten that lack of sleep, excessive fatigue, little sunshine, and contaminated air are far from innocent.

Lack of sleep in this group of women from 10 to 35 years of age showing 1,402 deaths for girls as against 983 males arises from numerous causes. Night life in theaters, cafes, dances or other public amusement places where the air is contaminated from tobacco and liquor fumes, where the heat of rampant jazz measures, continuous dancing and the emotional excitement of the evening contribute to an overheated condition and a subsequent chill, inevitable from the inadequate "evening dress" now so ubiquitous is erecting a heavy toll. Not only does loss of sleep stand out as a consequence here but fatigue also entrains.

Economic exactions further increase loss of sleep and fatigue. Married women of child-bearing age fill in the ranks of the workers to a hitherto unprecedented degree. Even this and the workings of the biologic function—though

customary continuous use of contraceptives is far from a first aid to health under these conditions might not entail an over fatigue were it not that in these instances the greater percentage of so-called business women are at the same time efficient housekeepers. Taking a leaf out of the book of those unsung martyrs who, whether widowed or picking up some other burden laid down by the men of the house have gone to wage-earning and yet must continue as housekeepers, the young married wife and business woman of today carries the double burden until she breaks down.

Inherently a woman by her biologic structure is more subject to tuberculosis than is the male. Consequently greater precaution should be taken to hedge themselves about with bulwarks of defense. Consider that research studies involving daily observations and tests of normal healthy women with no duties to perform and carried out over a period of several months resulted in these partial findings. For all ages the death rate from tuberculosis was 55.0 among females and among males, 70 per 100,000.

In the group from 10 to 14, that for girls per 100,000 stood 14.7 as against 6.6 for boys; age 15 to 19 the rate was 62.3, for girls against 39.0 among the boys. In the 20 to 24 age group it stood 96.5 for females and 84.7 for males and from 10 to 35 years 52 per cent. greater in females than in males.

This condition calls for drastic steps. It would seem desirable while admitting the influence of the biologic function as a destructive agent to forefend so as to restore the physical balance altered by this natural depletion.

Remedies suggested are the usual prophylactic course. Sufficient nourishing diet, avoidance of fatigue, sudden chill or continued exposure, and as lavish as possible a supply of sunshine, rest, and fresh air.

Utopian conditions are not within the reach of all. But many sinners against the law of health can be taught to effect at least a partial repentance. It means merely the covering of silkclad ankles with galoshes in stormy weather, the wearing of sufficient underwear, not necessarily clumsy ill fitting garments—the clothing manufacturer has gone a long way to meet fashion's demands. It means too, sufficient food. The importance of nourishing food should be emphasized especially with the woman worker. At noon she must have food. Simple, digestible, but nourishing. Teach your female patients that it is better to have an inch more on her waistline than an inch less in her lung.

Mortality from tuberculosis has decreased 64.68 per cent. in twenty-six years. But girls during their "teen" age and men during their productive working period are stubborn yielders to the decrease. Girls in the adolescent age are frequently notoriously poor eaters. The youthful underpaid working girl only too frequently sacrifices the needs of the inner body for the demands of the outer body. To be sure there is some excuse for this. Appearances must be maintained. The day of the "shabby genteel" in the business world is long since passed away. The working woman must maintain appearance not totally dissimilar to the petted parasite on a comparative pittance. The question is no longer "body and soul" but body and back. You can if you are a working girl cut out your breakfast and luncheon and almost your dinner but you cannot cut the cost one penny of a pair of stockings, of shoes nor of any other article of clothing. We have all had patients come to us, who self confessedly have lived for weeks on little more than bread and coffee or tea and not very much of either. For the girl on a small income the milk diet is her best chance. Unfortunately we have not yet evolved a system that will tend to the general public living away from home a nourishing homely economical grist of daily fare. The nearest approach to this element was the old fashioned boarding house that like the old-fashioned doctor is now in the limbo of what though personable and necessary is now passe.

The average modern child is comparatively free from errors of diet and it is a consummation devoutly to be wished that it might be liberated equally in the way of dress. Overheated rooms are a menace but super ventilation should be confined to the atmosphere and not to childish legs. A garter concern last winter had a doggerel slogan that held more than a grain of truth. "Cover the knees and avoid the sneeze" read the verse. Common colds with their very uncommon sequelae will find the first gate in the nursery barred against them by better protection of juvenile bodies in adverse weather.

Periodic health examinations are advised. This permits an early detection of tuberculosis

or other untoward infection. It is wise to remember that the great white plague is neither an immigrant's nor a sweat shop disease to the exclusion of the halls of the mighty and homes of the rich.

THE GROWTH OF BUREAUCRACY IN AMERICA

Samuel G. Blythe in the *Saturday Evening Post* outlines the growth of bureaucracy in the United States. We abstract from his article as follows:

"The people of the United States have watched for more than twenty years the decay so far as government is concerned, of the old, vigorous and successful American policy and creed of individualism and self help, and have been messed and mussed about; taxed to the point where thrift and effort are penalized; regulated, restricted, uplifted, reformed and directed in their ways and walks by a crowd of political shysters whose only motive is self-interest; overwhelmed by an avalanche of useless and expensive laws and exploited by class legislation that had its selfish warrant in the desires of the class legislated for, regardless of the people, and the political necessities of the legislators who framed it. The people have seen the growth of a bureaucracy that has increased tenfold since the beginning of this century, and the expansion of the commission idea until commissions barnacle the ship of state in such numbers that little of the original hull can be seen, each commission providing salary and the sustenance to politicians at the expense of the people and not one in ten of them worth 5 per cent. of what it costs.

The people are coming, in a way, to realize that what they think is their democracy is in reality a political autocracy, and that all this benevolent and pious paternalism is, in fact, but the centralization of the power and authority of that autocracy, which extends not only to the regulation of their affairs, morals, enterprises, efforts, and the heavy and increasing demands on their capital and incomes, but seeks to dominate their opinion and to direct them all, like sheep, along stipulated lines that are agreeable and useful to those in power."

A MARK TO SHOOT AT

One of the problems of many Medical Societies throughout the country recently, has been the collection of annual dues from members. It is the experience of all State Societies, and many County Societies scattered throughout the country that there has been a greater delinquency in payment of annual dues during 1931, than in many years.

The Illinois State Medical Society has had the same experience of all other societies, but in the case of one County Society, and an ambitious secretary, we wish to report that DeKalb County Medical Society has during the month of November, 1931, paid annual dues for 1932 for their entire membership.

Dr. Clifford E. Smith has been secretary of the Society for a number of years, but recently decided that he should be succeeded by another member. The Society unanimously elected Dr. Smith as President, and Dr. James C. Ellis Secretary, to succeed Dr. Smith on January 1st. Dr. Smith realizing the duties and responsibilities of all County Society Secretaries, and wanting to make the work of his successor easier the first year in office, collected 1932 annual dues from all Society members, and consequently the DeKalb County Medical was the first component Society to pay 1932 annual dues, and to date is the only one on the 100 per cent. list for next year.

It is quite probable that the depression has not affected the physicians of DeKalb County less than those in other counties, and what one Secretary can do, others should be able to do. With this start, the membership of the Illinois State Medical Society should not be decreased in 1932 by members dropping out on account of their inability to pay the small per capital tax assessment but on the contrary, every County Society Secretary should endeavor to not only maintain their membership, but actually increase it during the year.

INTELLIGENCE OF DRUG ADDICTS

Commenting upon the question which is sometimes raised as to whether or not drug addicts are worth reclaiming, Surgeon General Hugh S. Cumming, of the United States Public Health Service, recently stated that drug-addict prisoners who have committed offenses against the United States, and who are no longer taking drugs, show, according to preliminary studies of the Public Health Service, a greater proportion

of above average intelligence than is observed among non-addict prisoners.

Among the drug addicts studied, thirty in every one hundred were above average in intelligence; whereas eighteen in every one hundred prisoners not addicted to the use of drugs were above the average in intelligence. On the other hand, seventeen in every one hundred drug addict prisoners were considered to be normal but of dull intelligence; whereas one in every ten addict prisoners was mentally defective, and one in every six among the non-addict prisoners was mentally defective.

DR. EDMUND J. BURKE'S BOOK OF POEMS

Narrative poems are vogue again. Stephen Vincent Benet picked up the thread made so familiar to the youth of the mauve decade by Owen Meredith's "Lucille" as well as by its companion piece on every parlor table of the gay nineties, "Katrina" and "Bittersweet" by the late Dr. Josiah Gilbert Holland. Recently a contemporary and facile novelist, Alice Duer Miller, issued a novel in verse form that would seem sure to be evoking kindly comment. Comes now a candidate for Dr. Holland's mantle—or is it merely a ride on the gig-caught Pegasus?—in Dr. Edmund J. Burke, La Salle, Ill. An attractive volume of Dr. Burke's poems entitled "The Outcast" has been sent to this desk. Varied in theme and presentation the volume is bound to be of interest. Dr. Burke shows a facile familiarity with the standard, classic verse form of such masters of rhythm in language as Byron, Browning, Pope and Wordsworth. The lead poem from which the volume takes its name treats of the life of one individual caught securely by the laws of Karma. Much serious thought and able workmanship has gone into this volume. Perhaps the bit that will linger longest in the memory is the word etching—"Spring and Winter."

METHOD OF MATCHING BLOOD OF THE PATIENT WITH BLOOD OF THE DONOR

In matching blood of the patient with the blood of the donor according to type, the Moss method is the one most universally employed.

There are four principal types among patients, I, II, III and IV, and the donor is selected accordingly as his type can supply blood similarly composed and suitable for the patient. His number as donor corresponds to the type number of the patient.

Patients of type I are the best recipients, as this type can receive blood from all types of donors, I, II, III and IV.

Donors of type II can give to types I and II in patients.

Type III in donors can give to types I and II in patients and can receive from types II and IV.

Type IV is called the universal donor, being able to give to the four types of patients, but can receive only from type IV.

By blood-matching or blood-typing, is meant the mixing of the bloods without agglutination, or clotting.

Some surgeons insist that both donor and recipient should be in the same type group, but this is not a universal practice.

The danger in transfusion is that either the donor's or the recipient's red blood cells, or the red cells of both, may cause:

(a) Hemolysis, or breaking up of the red bloodcells;

(b) Agglutination, or coagulation in joining together, or

(c) Both hemolysis and agglutination may take place together.

Out of 100 persons tested the relative percentage of frequency in adult groups is as follows:

Type I—10 per cent.
Type II—40 per cent.
Type III—7 per cent.
Type IV—43 per cent.

ANNUAL MEETING AT SPRINGFIELD, 1932

Springfield is pleasurably awaiting the meeting of the Illinois Medical Society on May 17, 18, 19, 1932. Springfield is a city of national historical interest, which every Illinoisan and American should give at least one appreciative visit, and May is a delightful month in which to do this.

Hotel reservations should be made as soon as possible to avoid a last minute rush. Rooms can be had at varying prices, from the de luxe accommodations of the larger hotels, to those of the smaller, quieter, and less expensive hostelries.

There is ample space for all and every purse can be suited.

The Committee on Hotel Accommodations will gladly co-operate in any way possible to make your Medical Week a success and pleasure.

It is keenly hoped that members will bring their wives and families along. The women of the Auxiliary of the Medical Society are planning a hearty welcome for the ladies and will exert themselves in every way to make this visit one to be remembered.

The Sangamon County Medical Society and their Ladies' Auxiliary also join in sending an urgent invitation to you, Dr. and Mrs. Physician, to come to Springfield for this Medical Meeting, on May 17, 18, 19, 1932, to visit us and to visit our town, the home of Abraham Lincoln, and the Capitol of your State.

Send your reservations direct to the hotels.

HOTEL RATES

Abraham Lincoln Hotel.	150 rooms	$3.00-$7.00
St. Nicholas Hotel.....	350 rooms	2.00- 6.00
New Leland Hotel.....	150 rooms	1.75- 7.00
Illinois Hotel	60 rooms	1.25- 2.50

There are other hotels which are smaller but comfortable.

DOCTORS DESIRING TO PRESENT PAPERS BEFORE THE 1932 MEETING OF THE ILLINOIS STATE MEDICAL SOCIETY

Take Notice

SECTION ON PUBLIC HEALTH AND HYGIENE

All persons desiring to preface and read papers before the section on Public Health and Hygiene of The Illinois State Medical Society to be held at Springfield in 1932 should communicate with the chairman of the section, Doctor Arlington Ailes, LaSalle or Doctor Arnold Kegel, Chicago.

SECTION ON RADIOLOGY

Doctors wishing to present papers before the State Society meeting to be held at Springfield, May 17, 18, 19, 1932, kindly communicate with Dr. E. L. Jenkinson, Chairman, Chicago and Dr. P. B. Goodwin, Secretary, Peoria.

SECTION ON MEDICINE

It is desired by the officers of the Medical Section that any members desiring to present papers at the Springfield session notify *both* the Chairman and Secretary at the earliest possible date. Chairman, Dr. Warren Pearce, Quincy and Secretary, Dr. W. H. Nadler, 8 South Michigan Avenue, Chicago.

SECTION ON EYE, EAR, NOSE AND THROAT

Any member wishing to present a paper at the Eye and Ear Section meeting at Springfield, May 17 and 18, will please communicate immediately with Dr. Frank Novak, Jr., Secretary, 30 North Michigan Avenue, Chicago.

SECTION ON SURGERY

Those wishing to read papers before the Surgical Section will please apply to James T. Gregory, 826 East 61st Street, or Sumner M. Miller, of Peoria, Illinois.

EDUCATIONAL COMMITTEE SERVES COUNTY MEDICAL SOCIETIES AND LAY GROUPS DURING NOVEMBER, 1931.

SPEAKERS' BUREAU:

88—Lay meetings addressed by members of the Illinois State Medical Society.

1—Church group.
7—Parent Teacher Associations.
11—Women's Clubs.
44—High School Assemblies.
2—Home Bureaus.
3—Y. M. C. A.s.
5—Men's Service Clubs.
1—Nurses Association.
2—Women's Auxiliaries to county medical societies.
12—Young Mothers' Groups.

Reports indicate that these talks were appreciated: "Excellent Talk." "An excellent address, well delivered and appreciated." "We were all very well pleased with the talk and many expressed a desire to have the speaker again next fall." "Doctor A's talk to our organization was very instructive, beneficial and thoroughly enjoyed by all. He has a very pleasing personality and is 'easy' to listen to." "One of the best meetings we have had for some time." "Dr. S. gave a very interesting and educational talk. He told of things in such a way that all could understand what he meant. He kept the interest of all. His subject matter was well organized."

SCIENTIFIC MEETINGS:

25—Physicians addressed scientific meetings.

District Dental Meeting, Macomb—Harold M. Camp—"Some Interesting Problems in Eco-

nomics and Cooperation between the medical and dental professions."

Schuyler County Medical Society—Harold M. Camp.

Schuyler County—William D. Chapman.

Decatur Medical Society—R. K. Packard—"Medical Economics."

Will-Grundy County—S. M. Feinberg—"Allergy, Hay Fever and Asthma."

Southern Illinois Medical Association—

Charles A. Elliott—"The Management of Edema."

J. G. Carr—"Biliary Tract Disease."

A. A. Goldsmith—"Gastric and Duodenal Ulcer."

E. P. Sloan—"Goiter."

Knox County Physicians Club—Aaron Arkin—"Pulmonary Diseases and Their Differential Diagnosis."

Bureau County Medical—E. A. Oliver—"Practical Points in Dermatology."

Bureau County Medical — Leon Unger — "Allergy."

Rock Island Medical — Don C. Sutton — "Treatment of Pneumonia."

Ogle County Medical—R. T. Pettit—"Cancer."

Ogle County Medical — R. W. Dunham — "Tuberculosis."

Will-Grundy County Medical—E. A. Oliver—"Skin Diseases."

McHenry County Medical — Walter B. Netcalf—Tuberculosis Clinic.

Jackson County Medical — Frank Deneen — "Pneumonia."

LaSalle County Medical—Robert I. Barickman—"Persistent Thymus."

LaSalle County Medical—John A. Wolfer—"Common Duct Diseases."

LaSalle County Medical—William H. Holmes—"The Nature and Treatment of Bright's Disease."

Will-Grundy County—Gilbert H. Marquardt—"Diagnosis and Treatment of Circulatory Disturbances and Edema of the Extremities."

DeWitt County Medical—Charles S. Williamson—"Pneumonia."

Paris Hospital, Paris—George deTarnowsky—"The Treatment of Fractures."

Paris Hospital, Paris—L. M. Hurxthal of the Lahey Clinic.

RADIO:

42—Radio talks given from WJJD and WGN, Chicago.

17—Regular broadcasts.

25—Young Mothers' Hour.

Charles J. Drueck—Bleeding Piles.

Herman P. Gunnar—Arthritis.

John M. Lang—Early Recognition of Cancer.

Frank G. Murphy—Arthritis.

S. C. Henn—The New Baby.

Charles E. Sceleth—Alcoholism.

Charles E. Franklin—Common Colds.

Maurice Lewison—Causes & Prevention of Heart Disease.

Oscar E. Nadeau—Goiter.

George P. Guibor—How to Catch a Cold.

George S. Livingston—The Nose and Its Common Ailments.

Leo Zimmerman—Varicose Veins.

G. Howard Irwin—Acute Appendicitis.

Bernard Maloy—Points of Interest Relating to Pneumonia to Avoid Pneumonia.

Alex S. Hershfield—Mind Health.

A Chicago physician writes the Educational Committee as follows:

"I wish to thank the Illinois State Medical Society for the opportunity of speaking over the radio. I hope the paper will fulfill the purpose for which it was intended. From general observation, I believe that the public is very much interested in the good work the society is doing. From a personal standpoint I feel that, during the preparation of this paper, my interest and knowledge of this subject was improved."

PRESS SERVICE:

493—Articles, regular service to newspapers.

27—Monthly service.

40—Newspapers, re meeting Perry County Medical Society.

90—Newspapers, re meeting DeWitt County Medical Society.

55—Newspapers, re meeting Madison County Medical Society.

31—Community newspapers, re meetings Branch Societies, Chicago Medical Society.

3—Chicago Association of Commerce, re meetings Chicago Medical Society and Special Societies.

739—Total Releases during November.

6—Health articles written and approved by the Committee:

Diptheria Control.
Comfortable Shoes.
Social Disease.
Imitating Nature's Process.
Inward and Outward Goiter.
Hemorrhoids.

SPECIAL SERVICE TO COUNTY MEDICAL SOCIETIES AND AUXILIARIES:

273—Notices sent to physicians relative to Bureau County meeting.

130—Notices sent to physicians relative to Perry County meeting.

375—Notices sent to physicians relative to LaSalle County Meeting.

275—Notices for Woman's Auxiliary to Chicago Medical Society.

JEAN MCARTHUR,
Secretary, Educational Committee.

HOW'S IT BEING A DOCTOR IN RUSSIA?

All the dignity and authority of the medical profession in Soviet Russia is regulated by the Government.

There is not much private practice—there are few private hospitals—and the great majority of Soviet physicians are "working at fixed salaries."

This we learn from a Moscow correspondent of the London *Sunday Observer,* who goes on to say:

"That this socialization of medicine does not always work out very satisfactorily in actual life was shown when a brigade of volunteer investigators from the official organ of the Moscow Soviet, *Rabochaya Moskva,* made a flying survey of the medical institutions of Moscow and its environments.

"The first point that attracted the attention of the investigators was the extreme overcrowding of the hospitals and its accompaniment: the failure in some cases to render medical aid when it was needed.

"This last factor increased the number of fatalities. In the large Botkin Hospital, 40 per cent. of the deaths take place during the first five days after admission, 'mainly,' according to the investigators, 'because the patients were not received into the hospital in time.'

"The report also contains the statement: 'Patients who require surgical aid are in the most lamentable condition. A month and a half may pass before the patient obtains a bed in the surgical department.'"

AMERICAN DENTAL ASSOCIATION TO ADVERTISE ETHICALLY

The American Dental Association in its National Convention, held at Memphis, Tenn., October 19 to 24, has decided to advertise.

This publicity will be handled by the American Dental Association through a new bureau that has been organized and which will keep the public informed on the care of their teeth, mouth hygiene, proper diet and the prevention of dental troubles. The theme of the publicity will be along the lines of prevention, and, if heeded by the public, will save the people of America millions of dollars in dental bills. Newspapers, magazines, radio and other forms of advertising media will be used in this publicity program, but in no sense will any individual dentists' names be mentioned nor fees quoted.

"Prevention" as a theme is an unselfish one, and the various messages that will be presented will make the public more dental-minded and cause them to stop neglecting their teeth, and, consequently, their health.

EXAMINATION BY AMERICAN BOARD FOR OPHTHALMIC EXAMINATIONS

The American Board for Ophthalmic Examinations will hold an examination in New Orleans on Monday, May 9, 1932, at the time of the meeting of the American Medical Association.

Necessary applications for this examination can be procured from the Secretary, Dr. William H. Wilder, 122 South Michigan Avenue, and should be sent to him at least sixty days before the date of the examination.

DIVORCE

A Chicago actress came into a lawyer's office and said to him: "I want a divorce."

"Certainly," said the lawyer. "For a nominal fee I will institute proceedings, and should experience little difficulty in procuring it for you.

"What do you call a 'nominal fee'?" asked the actress.

"Five hundred dollars," said the lawyer.

"Nothing doing," retorted the lady. "I can have him shot for ten dollars."

WHY "PASS THE BUCK" CONTINUALLY?

In this day and age, everyone feels that if he can get service without having to pay, that's good business; but look at it from the standpoint of the other fellow. We have some members who never, or very seldom, attend a meeting, even if it is held only a few miles from their place of business, yet they get all the protection and benefit that both the county and state society can extend. Why is it thus? Why should the lax fellow "pass the buck" continually? In this day too many physicians let their thoughts and concern pander to the indifferent mood. It surely has the aspect of "rotten" business and is unfair to the more faithful members who attend meetings and render service to the other fellow who may need it. What will the "buck-passer" say when the trickster gets hold of him, or when by some unforeseen mishap he needs help in the courts of justice when he is sued for an alleged case of malpractice? Think about it, non-attendant, and see what may possibly happen to you some fine day. Then your laxity will haunt you with a vengeance and you'll get a good sweating.

No insult can be inferred by the slang word—"buck-passer," inasmuch as it was stolen from another county society publication. The expression fits the ideas exactly; it hits the nail precisely on the head. There is more truth than poetry in the above dissertation.—Madison Co. Doctor.

SYPHILIS IN PRISONERS

During the last few months a blood examination has been made of each inmate in the Southern Illinois Penitentiary. These tests indicate that about 1 in each 5 of the prisoners is infected with syphilis. Approximately 3,000 tests were made on the prison population of 2,500, some repetitions in those who showed positive reactions accounting for the excess of tests over the number of individuals concerned. Treatment was recommended for 250 of the group who showed serological evidence of syphilis.

Carefully conducted surveys in various parts of the country indicate that not over 1 per cent of the general population in the United States is syphilitic. It appears, therefore, that among this particular prison population, syphilis is about 20 times more frequent than in the population at large.

UNITED STATES PUBLIC HEALTH SERVICE AGE AND SEX INCIDENCE OF INFLUENZA AND PNEUMONIA

The United States Public Health Service has recently completed a statistical study of the age and sex variation in cases of influenza and pneumonia. This study summarizes the age and sex variation in influenza and pneumonia morbidity and mortality during the 1928-29 and the 1918-19 epidemics. It is based on canvasses following each epidemic of families including nearly 150,000 persons in about 12 localities in the United States.

While there are some similarities in the 1928-29 and 1918-19 age curves, the differences are more striking than the similarities. The young adult peak in pneumonia incidence and in mortality in 1918-19 was absent in 1928-29.

Pneumonia incidence and the death rate were both much higher in 1918-19 than in 1928-29, but the percentages of pneumonia cases that were fatal were not greatly different in the two epidemics. There was a very large difference in the percentage of cases complicated by pneumonia in the two epidemics; but once pneumonia existed, the chance of fatal outcome was nearly the same in both years.

Statistical data of this kind give no clue as to the reason for the striking difference in age incidence in the two epidemics, and any attempt at explanation would be only conjecture.

THE BLIND AND DEAF-MUTES IN THE UNITED STATES

Statistics of the blind and deaf-mute population enumerated in connection with the 1930 census, classified by sex, color and age have been issued by the Bureau of the Census in a bulletin entitled "The Blind and Deaf-Mutes in the United States: 1930." This is a pamphlet of 23 pages, consisting mainly of statistical tables, showing the enumerated blind and deaf-mutes by geographic divisions and States as well as by cities of 100,000 inhabitants or more.

A total of 63,489 persons were reported as blind by census enumerators, and the ratio of blind to the general population, on the basis of the returns, was 517 per million.

A total of 57,084 persons were reported as deaf-mutes, the ratio of deaf-mutes to the general population, on the basis of the returns, being 465 per million in 1930.

In addition to those reported by enumerators either as blind or as deaf-mutes, there were 1,942 persons reported in 1930 as being blind deaf-mutes.

Of the individual States, New Mexico showed the highest ratio of blind to the general population, while Wyoming showed the lowest ratio.

Kansas showed the highest ratio of deaf-mutes to the general population, while Wyoming, which showed the lowest ratio of blind, showed next to the lowest ratio of deaf-mutes. The lowest ratio was shown by the District of Columbia.

In addition to the statistical tables, the bulletin which has just been issued contains a brief history of the enumeration of the blind and of deaf-mutes and a comparison of methods and results since the first enumeration, which was made in connection with the census of 1830.

A copy of the bulletin may be obtained by writing to the Bureau of the Census, Washington, D. C.

JUST THE SAME

He: "Can you make the cakes that mother used to make?"

She: "Yes, if you can put up with the indigestion father used to have."

Original Articles

PERNICIOUS ANEMIA*

W. P. ARMSTRONG, JR., M. D.
SPRINGFIELD, ILL.

Of the many forms of anemia that we, as practitioners, come in contact with, there is one form that has held the center of interest the past few years. Only five short years ago a diagnosis of pernicious anemia was a death sentence. Our professors had merely to quote Addison's original 1849 description of the disease to cover their subject. Namely, "Etiology unknown" and "resists all remedial efforts." The clinics were full of the cases and students had an opportunity of seeing them in all stages of relapse and remission.

The results of Whipple's experiments on dogs and the wonderful adaptation of the liver principle to human beings by Minot and Murphy in 1926 are known to everyone. This revolutionary work not only completely changed the prognosis for these cases but opened up great fields for investigative research regarding the etiology and dietetic treatment of pernicious anemia.

The purpose of this paper is to discuss the latest research contributions and to present the essentials for adequate treatment. This with particular reference to the potent materials that are used, the dosage, the effect of complications, the use of iron, and the importance of proper diet and regulation of the patient throughout his entire life.

Much of the material presented is by the kindness of Dr. George Minot, who sent a large amount of his experimental data, including work as yet unpublished. And more by the courtesy of Dr. Murphy and Dr. Sturgis, also former associates at the Brigham Hospital, who sent many reprints as well as many new ideas in regard to proper therapy.

One of the important newer contributions was the introduction a short time ago of another potent material to be used in the treatment of pernicious anemia. Up until 1929 liver, kidneys and brain had been used satisfactorily and exclusively. At this time Sturgis and Isaacs began feeding desiccated hog stomach to their cases with completely satisfactory results. They found it just as effective as liver and found that it can be produced more cheaply since it utilizes a tissue which is otherwise waste material. The mucosa as well as the stomach muscle is potent and the effective substance is soluble in water and is heat labile. This differs from the active principle in liver, which is heat stable. The final product is dried and defatted, has very little taste and only a slight odor. Sturgis advises ten grams of the desiccated stomach per million deficit in red cells per day as a maintenance dosage.

Also working in this general field of research was Dr. William B. Castle and it was he who prosented proof of the relationship between gastric function and pernicious anemia.

Dr. Castle fed slightly cooked hamburg steak to normal persons and allowed it to digest for an hour before recovering it with a stomach tube. This material then introduced daily into the stomach of a pernicious anemia case caused a remission analogous to that of liver. This suggests that gastric digestion in patients with pernicious anemia is defective since it is unable to liberate from protein a substance which prevents the development of pernicious anemia; viz., a substance, which, if it were present, would allow for complete maturation and release of red blood cells. In the normal person this unknown blood controlling substance may be stored in the liver or kidney but must certainly have as its original source, the stomach.

This proven fact points strongly to a close relationship between the gastro-intestinal tract and anemia and suggests that much will be learned in the near future regarding diet and its component substances in the etiology and treatment of pernicious anemia.

Until more is learned regarding the etiology of pernicious anemia and the disease itself prevented by appropriate measures, we will have to deal with cases of this type. And the proper handling of these cases means a great deal more effort on the part of the physician than is generally displayed by him when he gives directions to eat plenty of liver, take two or three bottles of extract a day and come back if they do not feel better. This sort of direction gives a loose understanding between the physician and patient and assures inadequate rather than the adequate treatment so essential in this condition.

For above all else, the treatment for perni-

*Read before the Section on Medicine of the Illinois State Medical Society, May 6, 1931, at East St. Louis.

cious anemia must be adequate. For the physician must know for certain that the patient is taking the full amount of the material prescribed and that he will continue to take enough of the preparation throughout his entire life. This can be in the form of liver, kidney, brain or stomach or the potent preparations obtained from these organs.

The potency of the various preparations vary and it is essential that the prescribing physician realize that brain is only one-third as potent as liver and that the extract derived from one hundred grams of liver is about as potent as sixty-five grams of prepared liver substance. The defatted pig stomach is about 25 per cent. more potent than liver.

In other words, in a true pernicious anemia a remission can be started by the daily use of two to three hundred grams of prepared liver, by the extract from 5 to 600 grams of liver, or from 150 to 250 grams of fresh pig stomach or the defatted extract from this amount.

This remission has as its early sign the prompt, temporary definite increase of the reticulocytes. This elevation persists for about ten days and in the usual case is in inverse relation to the level of the red blood cell count. From the study of a large group of patients it has been possible to construct a curve showing the height of the expected reticulocyte response. With a low blood count, a marked increase in reticulocytes is expected; with a relatively higher count, the rise is less remarkable, and when the count prior to treatment is three million or more, there is no change in the percentage of the reticulocytes.

This situation depends probably on the smaller number of primitive cells in the marrow when the count is high than when it is low. More of these cells are influenced by liver the lower the level of the red blood cells, the liver promoting rapid maturation and release in the circulation of the reticulocytes. The life then of these individual reticulocytes is about four or five days, at which time they mature to full erythrocytes losing their chromophylic staining properties. In full remission the level of these reticulocytes reaches normal in about three weeks.

This method of predicting the rise, knowing the cell count before treatment and using a given amount of the extract, is very accurate and is the most reliable method of determining the potency of various preparations used in the treatment of pernicious anemia.

Failure in getting a reticulocytic response and a consequent remission may be due to incorrect diagnosis, insufficiently potent material or complications.

The diagnosis is usually simple, for unexplained anemia, the achylia gastrica, glossitis, and the characteristic blood picture and spinal cord changes, all point to pernicious anemia. However, bothriocephalus latus, spure, carcinoma of the stomach and aplastic anemia sometimes closely resemble the disease. The reticulocytic response to known potent material usually easily and quickly establishes the accuracy of the diagnosis.

If there is no response, the diagnosis is certain, and the material known to be potent, the amount should be doubled. Sometimes very large doses are necessary—often due to complications and difficulties with absorption. In very sick patients, huge doses may be necessary and should be placed in the stomach by tube.

Sturgis gave thirty vials at a time and found the same end result as if he had given three vials for ten consecutive days. It appears that the response depends on the total amount of active principle rather than the amount consumed each day. For the active liver principle seems to be utilized in a quantitative fashion, the effect of a given amount lasting a given time.

The percentage of reticulocytes does not appear to be influenced by the presence in the body of an excessive amount of the liver principle, a certain maximum number of cells being possible in any case, this number being related to the original blood level.

However, the rate of this response is definitely accelerated by massive doses. When thirty vials are given at one time the maximum reticulocytic response is in about five days after administration and ends in ten days. This is about twice as fast as the normal response.

Then, too, with this rapid method, there is a more intense stimulation of the hematopoietic tissues of the marrow as indicated by numerous nucleated reds, and immature white cells two or three days after the extract is given. No bad effects have been noted from this method thus far.

Another rapid method is by using a new stand-

ardized fraction prepared by Dr. Cohn. A little of this preparation given intravenously to pernicious anemia patients has produced maximal effects with prompt reticulocytic response. It is seldom necessary, however, to use this new, very potent, preparation. Further researches will probably show definite advantages for its use in the most severe cases.

The dose of potent material should be determined by the red cell count, the hemoglobin, the color index, the character of the cells and especially the patient's signs and symptoms. It should always be remembered that the patient himself must be made to feel well and the amount of liver should not be cut to the amount which just barely keeps up the blood count. For it is a fact that those patients who do the best, are most fit, and never suffer relapses, are the ones who take definitely large amounts of the potent material daily.

Complications are also a factor in determining the dosage. Neurological conditions require probably the largest amounts of the material. For the neuro-muscular symptoms usually do not improve until the blood has reached normal and then may change very slowly. And if the cord changes are pronounced, the improvement is apt to be slow and unsatisfactory.

Then, too, infection, disorders of the liver and other organs can affect the efficiency of the material. Old age and arteriosclerosis require an increased amount, often twice as much as that used for uncomplicated young persons.

A gastro-enteritis can affect the absorption of the potent material and require a considerable increase in the required amount.

The subject of iron in the therapy has always been one for considerable discussion. It is, however, definitely indicated in a few of the types of pernicious anemia, especially those in which there is a persistent low color index after the red cells have returned to practically normal.

A perfect example of this type of case is that of a woman of sixty-five that Dr. Minot saw with me two years ago. She had been brought into a Maine hospital by the Seacoast Mission from an offshore island to die of probable cancer. Study of her blood showed 900,000 rbc and 22 per cent. hemoglobin. The blood picture was typical and she gave the history of having lived entirely on canned beans, potatoes, bread and sea food her entire life, there being no vegetables, fruit or muscle meat on the island.

Massive doses of extract with an amount of fresh liver each day by tube produced a characteristic response. Her red cells rose rapidly but the hemoglobin remained low. At this stage large amounts of iron were given and there was a consequent definite rise in the color index and a very distinct improvement in the feeling of well being of the patient.

In hemorrhage or chronic blood loss complicating pernicious anemia, iron therapy is indicated and does materially increase the chromatic element of the blood.

Iron, when given at all, should be given in sufficient dosage. It should be given preferably in one of the soluble forms, such as ferric ammonium citrate.

This drug may easily be dissolved in water or milk and can soon be built up to a maximal and adequate dosage of two grams t.i.d.

Besides adequate liver regulation and possibly iron therapy, strict attention must be devoted to the patient's conduct and his diet. He should have moderate regular exercise, long hours in bed at night, freedom from mental worries and a sufficiency of well balanced foods. As in secondary anemias, his food should contain plenty of fruits, fresh green vegetables, muscle meat and sufficient vitamins.

Of the vitamins to be had in abundance, the water-soluble C type is most important. This is the form which is found in fresh fruits, vegetables and to some extent in fresh meats. It seems advisable to use at least small amounts of the unaltered liver when the extract only is used. This on the unproven hypothesis that there is a heat labile enzyme in the fresh preparation which is impaired by the extraction process. This fresh pulp can be given in a cocktail, need not be given more than every other day, and can be given in relatively small amounts.

The problem of decreasing the dosage of potent material is ever present. The authoritative opinion, however, is that it is unwise for any patient with pernicious anemia to take less than two hundred grams of prepared liver daily or the potent material prepared in the form of extract from three hundred grams of liver. The blood may stay up on less than this amount for a considerable time but experience has taught us already that those people presenting symptoms

and who have relapses are those who are trying to take the minimal amount rather than the optimal amount.

There is this general tendency for patients to receive too little of the active principle. To successfully treat these cases, we must be sure that the patient takes a potent preparation and that he swallows enough of it indefinitely each month.

616 E. Capitol Avenue.

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DISCUSSION

DISCUSSION ON PAPERS OF DR. HERNDON AND DR. ARMSTRONG

Dr. S. R. Hoover (Quincy): I hardly have time to discuss two such papers as these in such a short period, and, in addition, Dr. Armstrong has so well covered all the recent material available that it does not leave much to present in the way of discussion.

However, there is just one thing. He mentioned the intravenous use of liver extract. Castle and Taylor of Boston have experimented with this to some extent, and they gave large doses equivalent to 100 grams of liver a day intravenously and got remarkable response, both in the reticuloctyes and various other symptoms, including the neurological symptoms. While they don't offer any hope as to this being a cureall, still they think that it should come under consideration for the etiology and the therapeutic results.

One other matter that Dr. Herndon mentioned was the matter of transfusions. He said that he was glad to see the pendulum swinging back toward transfusion, and I think it is a very good thing. For a while, transfusions fell into disrepute because of the fact that they were given too far apart. They would give one every fourteen days, and there would be from three to five days that the patient would show improvement, and at the end of that time the new elements introduced began to disappear from the blood and before another one was given the patient was back in the same condition. These were large transfusions, from 800 up to 1,000 c.c.'s. If smaller transfusions, say of 350 or 400 c.c.'s were given every three to five days so that there is no time for these new blood elements to disappear from the blood stream, oftentimes remission can be started and be continued by the use of the proper diets.

Dr. J. P. Simonds (Chicago): I would like to suggest that in some of these cases of obscure anemias we might glean some information that would be of value from functional tests of the liver. As Dr. Graham emphasized this afternoon, the liver has so many functions that it is difficult to know whether any one test will give information as to how the liver is performing the particular function in which we are interested. In the normal breakdown of red blood corpuscles, which is constantly going on in the body, the hemoglobin molecule is disintegrated and its iron portion is stored. This has to be built up again into hemoglobin by the new red blood cells which are formed in the bone marrow. Dr. G. H. Whipple has presented evidence that the erythroblasts are not able to synthesize hemoglobin from the disintegration products that are available, that the liver plays a very important part in building up the iron containing a fragment of the hemoglobin part way toward the complete molecule, and that the erythroblasts in the bone marrow can only build up from that point. Hence if the liver function is inadequate in building up the fragments of hemoglobin to the point where the erythroblasts can utilize them, it might be well that the deficient liver function may be an important factor in many of these obscure cases of anemia.

Dr. C. A. Earle (Desplaines): Increased doses of iron seem to be a rather late development, but since that and more recently I have noticed in the literature the use of small doses of copper. I don't know where I saw it nor who said it, but whoever, he was he claimed that it increased the effect of a large dose of iron. I would like to ask the essayist to give his experience with small doses of copper.

Dr. S. E. Munson (Springfield): I think that these two most excellent papers are a fine thing in this section. Particularly they bring to us almost the last word in regard to the diagnosis and treatment of the anemias, which is one of the great problems of the man doing general medicine today.

The particular thing emphasized by Dr. Herndon's paper is that of diagnosis. Secondary anemia is a problem which is so broad and in which so many unfortunate mistakes happen in making a definite diagnosis before treatment is undertaken. There is no

*Paper of Dr. Herndon was printed in October Journal, page 302.

doubt but that the bad results which the average man has who attempts to treat anemia are due to the improper study of his case, improper histories, and a lack of accurate diagnosis

He also mentioned that we cannot discuss the subject of anemias in any way without discussing diet. We are becoming more convinced that the medical diseases which we see may be deficiency diseases. It is probably true that perhaps in early childhood, the child who is brought up on a high carbo-hydrate diet, starting to school, continuing through public school, and even in his college years, is probably anemic during that whole time on account of improper diet, which leads to many of these blood dyscrasias which we find in anemia.

I was talking just the other day before some children in one of the schools. The point I brought out was that the mother frequently comes to the physician and complains that her children are not eating well, and that they do not come home from school with any appetite. As I said to these children, who are probably using suckers or some cheap candy on the way home from school, the high carbohydrate diet in which they indulge lays the foundation early for deficiency diseases from diet.

The thing that is emphasized by Dr. Armstrong is the optimal diet and also the dosage of iron. Two years ago when I was in Boston I left in the hospital at that time a woman suffering from the early cord symptoms of pernicious anemia. She had been walking on two canes and had been almost bedridden. The clinicians I talked with there encouraged me with the cases in which they said they had already used the liver diet and high dosage of iron. I used it in this case afterwards. I just had a letter from her the other day. She is now in Southern California. She told me that her red blood cells were up to 5,000,000. She says that she still has the peculiar sensations in her lower limbs and has reflexes that she can't control, but that she loves her liver just as much as ever. She has always liked liver and has taken large portions of it.

The dosage of iron that was given to me at that time is not what Dr. Minot recommended in his paper read before the American College of Physicians meeting at Baltimore. As both of the essayists mentioned in their papers, where they gave the citrate of iron, particularly the ferric citrate, they are now using more than formerly. Dr. Minot stated that you can definitely see the difference between giving one grain of iron a day and increasing up to seven and one-half grains a day. As mentioned by the essayists, two to five grams a day are now frequently employed until amelioration of symptoms.

Dr. N. S. Davis, III (Chicago): The factor of hypochlorhydria has generally been associated with the primary anemias, but there also seems to be a type of secondary anemia that may be associated with that. I have seen quite a few cases that have responded very well to a dietary limitation and administration of hydrochloric acid, particularly in the form of hydrochloric acid milk. These people seem to be particularly intolerant to meats and chicken, especially those that have been in cold storage. They can eat fresh meats without discomfort.

Dr. Milton G. Bohrod, Decatur: In the discussion of pernicious anemia I think the prophylaxis stressed by the late Dr. Koessler is important. In connection with Dr. Koessler, it is an interesting phenomenon to discover why Minot and Murphy get all the credit for the new treatment of pernicious anemia, especially since Dr. Koessler's report came out in the same number of the American Medical Journal as did Minot and Murphy's. Dr. Koessler's work was based on an experimental study of pernicious anemia-like lesions in rats. Dr. Koessler stressed the fact that in the history of his patients he found peculiar dietary deficiencies, especially with people who did not like meat or with whom meat did not agree. Perhaps a certain constitutional character is necessary for the development of pernicious anemia. Maybe the absence of hydrochloric acid of the stomach is due to that constitutional peculiarity. Certainly you cannot say that the intolerance for meat is due to the achlorhydria, because you can take the same patients and feed them large amounts of liver, kidney and all the rest, and they get well. So there is no actual intolerance of meat. Most of it is, perhaps, psychological.

I think in the discussion of the treatment of pernicious anemia we should stress the prophylaxis, telling the people not to go on meatless diets.

Dr. William D. McNally (Chicago): I should like to ask Dr. Armstrong upon what basis the treatment rests, as the stomach contains a very small amount of iron and other mineral constituents?

Dr. James J. Donahue (East St. Louis): In the light of the beautiful therapeutic results that have been reached in the last few years as outlined by the essayists, our attention may possibly be directed too acutely to medical treatment of anemia, and we may overlook the very important consideration in the treatment of anemia, particularly with children, of the investigation for foci of infection. I think all those who have recently reported any series of cases recommending any treatment, whether it be in the apparent primary anemias of childhood or the more common secondary anemias, have presented very nice results the use of copper with iron has given and they have mentioned the eradication of foci of infection. It would seem that by far and large, most of the anemias of childhood can be accounted for in that way, and, of course, without the eradication it would seem that iron and copper together in any quantity could be of no value without the elimination of toxic agents in the body, particularly in the respiratory tract.

In regard to transfusion, we might heartily agree that it not only is important to use frequently but it is often to be used as a life-saving measure.

Dr. Lowell D. Snorf (Chicago): I am interested, Dr. Armstrong, in the condition of the people on this island that you mentioned. If I understood you correctly, this one person came across from the island who had not eaten but certain very limited foods all her life. What happened to the rest of the people?

Dr. Richard F. Herndon (Springfield):

I wish to thank the members of this section for their interesting discussion. I would like to emphasize one point. When a case is recognized as having secondary anemia we should add to our diagnosis not only the etiologic agent but also the essential mechanism concerned. That is whether the anemia is due to blood loss, diminished blood production or increased blood destruction. If we take the time to do this I believe we will approach the subject of treatment with less empiricism.

In regard to the use of iron I do not believe that it makes much difference in what form it is given as long as it is given in adequate amounts. However, since iron has to be dissolved before it can be used, it seems only logical to give it in a form that is already soluble. Moreover, Minot has shown that a slight increase in the acidity of the upper intestinal tract aids in its assimilation.

The role of copper in the treatment of anemia is still somewhat doubtful. There is some reason to believe that it exerts a synergistic effect with iron. Whether or not this is so I do not know. However, I understand that all the ordinary preparations of iron contain small amounts of copper as an "impurity," but which are, nevertheless, sufficient to meet any theoretical need and so save us the necessary of making further additions.

So far as the amount of blood which should be given at a transfusion is concerned I feel that there are at least two very different situations to be met. In the case of acute blood loss we are trying to replace this loss and restore blood volume. In such cases it is often desirable to give a large amount of blood, as 800 to 1200 cc. In cases of chronic anemia it is probably better to do as Dr. Hoover suggested and give only 400 to 500 cc. of blood at a time and repeat the transfusion as indicated. The reason for this is apparent. We are trying to increase the nutrition and function, not only of the body cells in general, but of the bone marrow in particular. A large transfusion may partially defeat this purpose for, by restoring the circulating blood to a practically normal level, it may temporarily remove the normal physiological stimulus to further blood production.

Dr. W. P. Armstrong, Jr. (Springfield): Just a word about transfusion in the severe cases. Years ago this was the accepted procedure, but since the introduction of extract it is never indicated, even though the count may be down around seven or eight hundred thousand. Instead we use the extract in large doses by tube or at times by the intravenous route. The patients seem to get along better when they are not transfused.

When Blaud's pills are used instead of the soluble forms of iron we give them up to 75 grains a day. These pills are made up fresh, however, and are not drug store stock.

There are some clinicians who always give some fresh liver in the form of pulp or cocktail when they are forced to give large doses of the extract. They do this believing that the extraction process destroys an enzyme in the liver which is different from the other enzymes. When even small amounts of unaltered liver is given with the extract they believe the results much more satisfactory and rapid.

REFINEMENTS IN SURGERY OF THE TONSILS INCLUDING ELECTRO-SURGERY*

FREDERICK B. BALMER, Ph. G., M. S., M. D.
CHICAGO

One may wonder what "refinements" could be offered that would warrant the attention of this specialized group and justify your consideration. The fact that many methods of removal and various instruments have been offered from time immemorial and that none have proven entirely satisfactory is prima facia evidence that something is wanting. The physician, as well as the laity, is eager to welcome any procedure that will lessen the hazards and poor post-operative results attendant on the removal of tonsils.

That tonsil surgery has steadily improved cannot be gainsaid, and a skillful operator will obtain almost always satisfactory results. Nevertheless, many operators obtain results that are not always ideal. It is fully appreciated that occasionally there are conditions over which we have no control. It is possible to perform a satisfactory tonsillectomy and at a subsequent time find an abundance of granulation tissue, lymphoid hypertrophy, regenerated or unremoved tonsillar tissue in evidence as well as undue scarring and adhesions. Allowance can be made for such a condition at least as far as the operator's conscience is concerned. The patient will be reasonable enough to understand the conditions if the physician has been prudent and explained the likelihood of such an occurrence at the proper time: namely, before the operation has been performed as well as after the operation should it occur. When the pillars are injured or removed accidentally or large pieces of tonsil tissue are allowed to remain, all of which are avoidable, and without an explanation, it is no wonder that patients are displeased and seek elsewhere for relief. The technique certainly

*Read before the section on Eye, Ear, Nose and Throat of the Illinois State Medical Society, May 6, 1931.

This investigation aided by a grant from the Council on Physical Therapy of the American Medical Association.

has not been adequate when frequent unsatisfactory postoperative results occur.

Limitations and Complications. That tonsillectomy is subject to limitations may be emphasized by considering the report made by Rhoads and Dick[1] in the routine physical examination of nurses entering training at the Presbyterian and Cook County Hospitals, who found the tonsils to have been incompletely removed in 73 per cent and the remaining tissue contained more pathological bacteria than the tonsil in its state prior to removal. Further the conditions did not improve until the recurrent tissue was removed.

The control of bleeding and tonsillar hemorrhage has always been of major concern despite the erroneous, if not amusing, statements to the contrary. It has always been my routine practice to ligate all bleeding vessels with plain dry catgut number 0 or 00. Ligation of vessels regardless of the locations has always been essential to good surgery and it is certainly indicated after an organ has been removed such as the tonsil with the liability of spontaneous bleeding. The surgeon should be able to do it with ease before being confronted with an emergency. It is well known that laryngologists in general have been reticent in conforming to the basic principles of general surgery. Recently a laryngologist made the statement "that he never encountered tonsillar bleeding that required ligature or other drastic methods to control it." Later the facts in the case revealed that the hospital interne had been in constant supervision of this doctor's case for the past twenty-four hours and was still applying local applications hoping to stop it. Another said, "If he could get his patient to vomit he was sure that the bleeding would cease." And they call medicine a science!

Good Operative Position Prerequisite to Exacting Technique and Avoidance of Postoperative Complications. Faulty operative position and a lack of definite, precise technique is responsible for many of the unsatisfactory postoperative results encountered. Local tonsillectomies are usually performed quite satisfactorily, but when it comes to operating under general anesthesia, the operator's reputation is frequently at stake. With the patient on his back, aspirating mucus, blood, and debris, postoperative complications are very prone. Working from above downward with his field of vision obscured and especially if there is any amount of bleeding, it is frequently impossible to do nice work. I believe a first class tonsillectomy is a major operation and requires the utmost

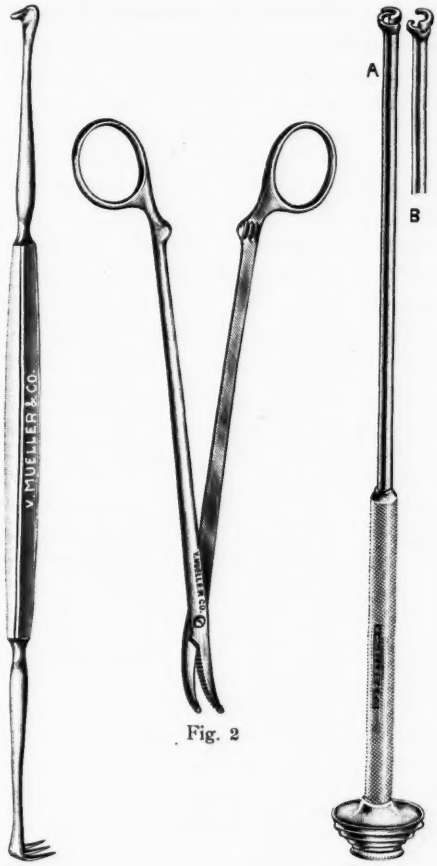

Fig. 1 Fig. 2 Fig. 3

Fig. 1. Combination three prong tonsil tenaculum hook and pillar retractor.

Fig. 2. Light-weight hemostat forcep with long, slender handle. The tension of the jaws has been considerably reduced so that undue crushing of the tissues is avoided. Weight, about 20 grams, in contrast to the usual tonsil forcep, which weighs 65 grams or more. Designed to permit the catgut loop to slide down the forcep without interference at the lock. It is seven inches in length and has a curved tip.

Fig. 3. Knot tier. This instrument is provided with a fenestra that may be opened to engage the catgut and closed, thereby preventing the tier from being caught in the tissues while in use. It is especially useful in tonsil surgery and other inaccessible places. It is supplied in various lengths as desired. A shows the tier closed. B, open.

skill and dexterity to obtain uniformly good results.

The following technique is offered by the writer in an effort to avoid complications and control the situation at hand when general anesthesia is employed.

Position of Patient on Operating Table; Operator, Assistant and Anesthetist. (Figs. 1-2-3.) The patient is turned over on his right side, his right arm flxed at right angles to the body to steady and maintain the position, knees flexed, right one above the other, table lowered causing the head to be slightly lower than the body and a small sand bag under the neck. The attention to the arms and legs may be dispensed with if one or two large sand bags are used by rolling the patient over on the side and maintained in position by the bags. This is especially useful in very heavy adults. (Fig. 4.)

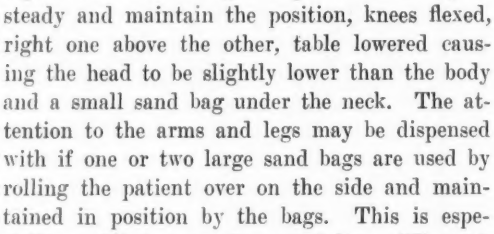

Fig. 4

Fig. 4. Relative position of patient, operator, assistant, and anesthetist.

1. Patient on his right side.
2. Operator, seated on a stool on a level with patient with his
3. Assistant, and
4. Anesthetist, also similarly seated.

Small insert showing positions from above.

The operator is seated on a stool in front of the patient's head with his assistant also seated on a stool to his left and the anesthetist at the head of the table. The mouth gag is inserted and a silk ligature is inserted through the base of the uvula (the muscular portion), using a small curved cutting needle or the author's uvula clip may be used to which a silk ligature is attached. (Fig. 5.) A forceps is attached o the ends of the silk ligature and set aside opposite to side on which the tonsil is being removed until ready for traction to be applied during the dissection of the tonsil which puts the posterior pillar on the stretch and simplifies the dissection materially. The tonsil is grasped with a tenaculum or the author's three pronged tonsil hook and if necessary a slight rotary traction is made that brings the structures into

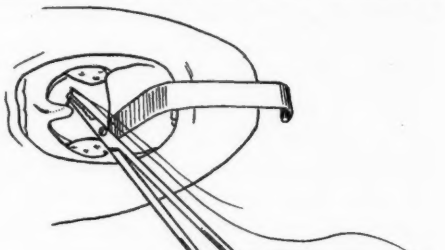

Fig. 5

Fig. 5. Showing silk ligature being passed through the base of the uvula (the upper third or muscular portion), using a small curved cutting needle. Small insert shows ligature inserted and a forceps being attached to the free end ready for traction to be applied during dissection, which puts the posterior pillar on the stretch and simplifies dissection materially. The uvula is held with a thumb forcep or the author's uvula tenaculum while needle is being inserted.

view while traction is made on the uvula. (Fig. 6.) This simplifies the dissection and one can

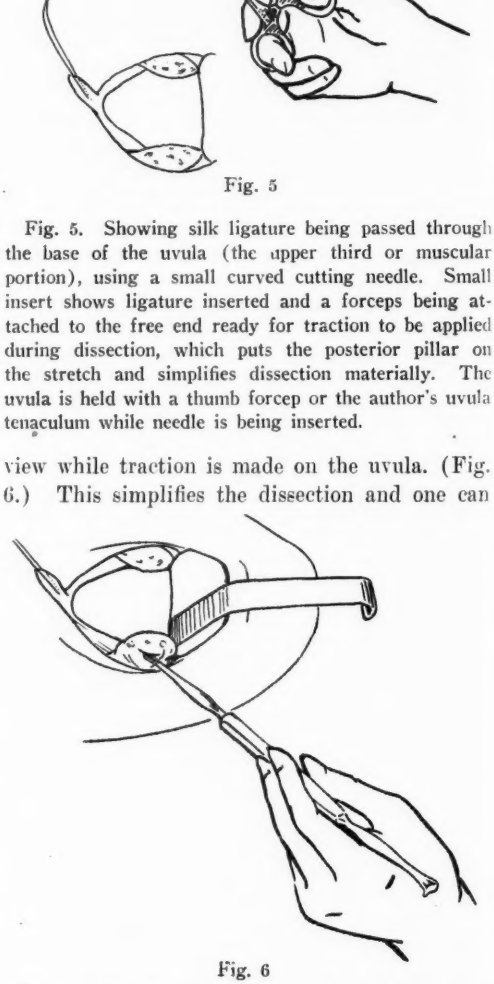

Fig. 6

Fig. 6. Tonsil grasped with author's three prong tenaculum tonsil hook. Tonsil is lifted from its bed and a slight rotary traction is made, bringing landmarks into view while traction is made on the uvula, simplifying the dissection and permitting of the utmost precision.

separate and free the tonsil with precision and where sharp dissection is employed, tearing and cutting of pillars, etc., is avoided. After the tonsil is freed in its entire circumference a blunt dissector may be used if necessary to completely separate the tonsil from its bed (sinus tonsillaris). A thorough appreciation of Fowler and Todd's[2] article entitled "The Muscular Attachments of the Tonsil" will do much to improve one's ability to completely remove the tonsil, especially that portion so prone to recurrence at the base of the tongue. The tonsil is snared off slowly endeavoring to wipe it off the tongue as it were, completely removing the lingual nodule, maintaining slight traction during the snare process. The snare wire should not be allowed to be drawn through the canula of the snare and pushed out again for use while wire is being inserted, as this angulates the distal end of the snare and usually nicks the tonsil capsule and later a piece of tonsillar tissue will be in evidence.

The patient lying on the side permits of an unobstructed view of the field of operation at all times. Blood and mucus that may appear can be readily withdrawn or allowed to collect in the buccal fossa and removed at our convenience. The tonsillar fossa is inspected by placing the writer's self-retaining clip on the middle of the anterior pillar and a little traction applied if the weight on the silk to which the clip is attached is insufficient, or the assistant may retract the pillar with either end of the combination tonsil hook and pillar retractor (Fig. 1). The fossa, thus widely exposed, is gently swabbed with tonsil sponge holders (Fig. 7) containing a small amount of cotton and the bleeding vessels are grasped with the writer's special tonsil hemostat forcep (Fig. 2). The forcep is especially designed to permit the catgut used in tying the vessels to slide down the forcep without interference at the lock. (Fig. 8.) It weighs approximately 20 grams in contrast to others of 45-60 grams. The tension of the jaws have been regulated to prevent undue crushing of the tissue. Should you endeavor to pick up a spurter and miss it one may leave the forcep in situ and localize the bleeding vessel in relation to the forcep already applied, sponging or aspirating as necessary to obtain a clear view. When one becomes adept at picking up vessels the procedure is almost automatic. A number 0 or 00 dry plain catgut ligature is applied in the following manner: the catgut is brought up from under the forceps (Fig. 8a) and a single knot is tied loosely (Fig. 8b) to permit sliding it down the forcep and over the curved tip. The author's tier is opened and the right strand of catgut is engaged in the fenestra and the instrument closed. (Fig. 8c.) This feature of the tier prevents the tier from being caught in the tissues which has proven very desirable and is thin, thereby avoiding obstructing one's view. (It may be used anywhere in surgery where an extended finger is essential and is supplied in various lengths. It is especially useful also in other inaccessible places such as brain deep abdominal, rectal surgery, etc.) The knot is shoved down the forceps and over the tip and securely tied, keeping the left strand in the left hand and the right strand in the right hand preferably in contact with the corrugated handle of the tier. As the knot diminishes in size (Fig. 8d) the slack is taken up by the thumb and index finger of the left hand. The usual amount of tension is exerted as is customary in tying catgut, using the tier as an extended finger. The forceps is removed and a second knot (Fig. 8e) is tied in a similar fashion and the end of the catgut cut off. The procedure is repeated until all the vessels have been ligated. It is easily accomplished. The procedure is effective and simple and without complications. The use of needles in suture ligation is infinitely more dangerous for obvious reasons and should be used in urgent cases preferably. While com-

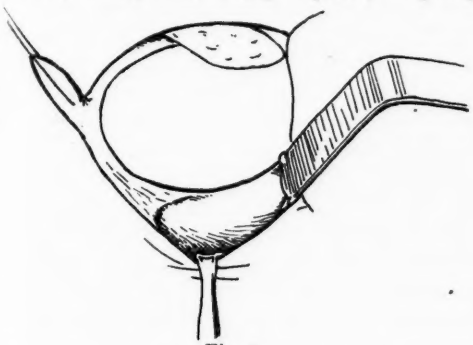

Fig. 7

Fig. 7. Tonsil removed and fossa inspected for vessels to be ligated. With moderate traction on uvula and anterior pillar retracted with patient on the side an unobstructed view is obtained and routine ligation of the vessels easily executed.

plications such as cervical cellulitis, meningitis, etc., are infrequent they have occurred using needles and one is not justified in courting trouble. Further, the vessels are frequently missed, going above, below or straight through the vessel unless mattress sutures are used. The same can be said for the instruments that cut through the tissue and insert the ligature at the same time and they usually start more bleeding than they control.

Advantages of the Procedure. The patient lying on the side permits of an unobstructed view of the field of operation at all times. Blood and mucus that may appear can be readily withdrawn or allowed to collect in the buccal fossa and removed at our convenience. The tonsillar fossa inspected by placing the writer's self-retaining clip in the middle of the anterior pillar and a little traction applied if the weight of the forcep on the silk to which the clip is attached is insufficient, or the assistant may retract the pillar with the tonsil hook. The technique as described has proven satisfactory and permits the operator to control the situation at hand. Complications are reduced to a minimum. Uvula holders that crush the uvula are very unsatisfactory in that they cause a profound edema and discomfort of the uvula for several days and also require the constant attention of an assistant. The uvula clip or suture leaves a single tiny puncture that causes no apparent discomfort and is held by the anesthetist only on special occasions when traction is needed. It is decidedly advantageous while removing the adenoid making it possible to see and inspect a portion of the post-nasal space tissue on direct vision. (Fig. 9.) The accidental removal of the uvula during the surgical procedure is well nigh impossible. The control of bleeding following adenoid removal is greatly facilitated by direct pressure, the ligature permitting the uvula to be pulled up and forward. The control of bleeding with the standard accepted method of tying with catgut is essential to good surgery. One may also coagulate the vessels by touching the forcep with the coagulating diathermy current, thus controlling bleeding. The latter method is more useful during local operations owing to the danger of explosions due to the general anesthetic.

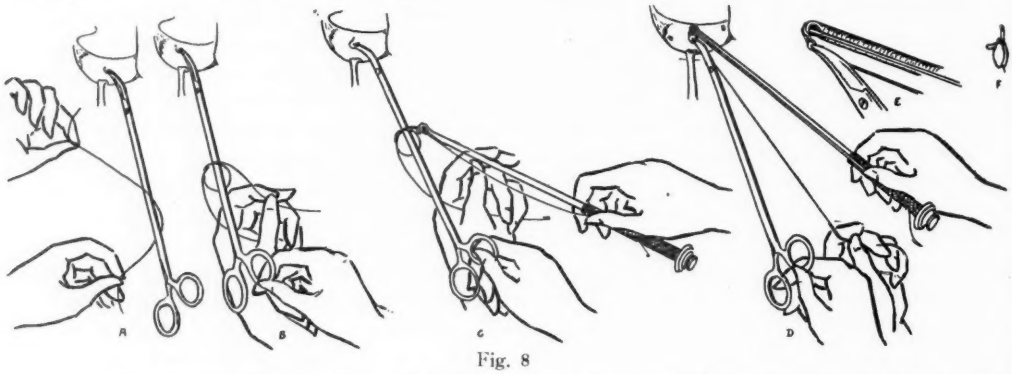

Fig. 8

Fig. 8. Showing the mechanics involved in tying the knot carrying it down over the end of the forcep and ligation of the vessel. Author's tier is opened and the right strand of catgut is engaged in the fenestra and tier is closed. Tier does not become entangled with the suture or tissues.

Fig. 8a. Catgut brought up from under the forceps which has previously clamped a vessel.

Fig. 8b. A single knot is loosely tied and both ends of the catgut are held in the operator's left hand while the forcep is being gently held and steadied by the assistant's right hand and whose left hand is swung around the left side of the patient's face and depresses the tongue, avoiding any obstruction to the view.

Fig. 8c. Knot being sent down the forceps. The tier is opened and the right strand of the catgut engaged and the tier is closed and the loop sent down the forcep.

Fig. 8d. Shows the loop over the end of the forcep and securely tied, keeping the left strand in the left hand and the right one in the right hand, preferably in contact with the corrugated handle. The slack is taken up by the thumb and index finger or the index and middle fingers of the left hand and securely tied.

Fig. 8e. Close up view of ligature around vessel being tied.

Fig. 8f. Close up view of ligature around vessel having been tied.

Uvula traction during removal of adenoid

An exacting technique as offered attendant with good results will do much in remedying the

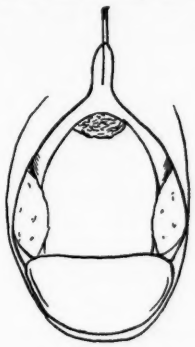

Fig. 9

Fig. 9. Showing author's uvula ligature, facilitating the removal of the adenoid, a portion of which is seen under direct vision. Accidental removal of uvula well nigh impossible and control of bleeding facilitated. Post nasal space may be measured digitally and the proper size adenotome selected and used. It is to be remembered that the patient is on the side and the head of the table is slightly lowered, thereby preventing aspiration of foreign material and permitting of an unobstructed view at all times.

chaotic position the tonsil operation holds today.

General Considerations. The presence of a tonsil is not the indication for its removal! However, I look upon all tonsils with suspicion as our forefathers did the Indians. There is no doubt that many tonsils have been unnecessarily removed. On the other hand, perfectly innocent appearing tonsils have been removed with marked improvement in health clinically. There can be no doubt as to the beneficial affects of a properly removed diseased tonsil.

This being the case, our constant endeavor should be to remove them properly. It is possible for an imbedded portion of unremoved tonsillar tissue, especially when covered over by adhesions and dense scar tissue, to cause as much or more disturbance than the original tonsil prior to its removal. Having endeavored to present what has been to the writer a satisfactory method of removing tonsils, permit me to present a method of tonsillar extirpation by electro-surgery, offered as an adjunct and a valuable newer aid to classical surgery,

ELECTROSURGERY OF THE TONSILS

A very noticeable interest is being manifest by the physician as well as the laity in the electrosurgical removal of the tonsils, no doubt due to the great amount of publicity given to it of late. My interest in this matter is to present to my colleagues the results of my investigations and observations devoid of speculation and over-enthusiasm.

At present, men of unquestioned reputation and ability have either sanctioned, condemned or are awaiting developments of the procedure. I appreciate the fact that there are those that say surgery is adequate under any and every circumstance, no contraindications either general or local. Also that their patients never refuse surgery and they have no postoperative complications, etc.. I have not been so fortunate. I have patients of our own calling and specialty that come from a distance that insist that the electrosurgery be used. It is very essential that the surgeon be the sole judge as to which method is most amenable. He should be therefore equipped accordingly.

General Considerations. The term "electrosurgery" is preferred to avoid confusion, the proper type of current being employed for the conditions at hand. With the apparatus as we find it today the current is very definitely controlled and safe when properly used. A thorough knowledge of the orthodox surgical procedure is essential to the proper and safe employment of electrosurgery. Certainly, the man that does not know what the surgical removal means is not expected to perform the electrical method satisfactorily. Up to the present the results of electrocoagulation that I have seen were not good. Improper technique or the calibre of men (frequently irregular practitioners) or both were responsible.

Several years ago I used negative galvanism for postoperative tonsillar remains and found it impractical, causing protracted pain, swelling, edema, etc., due to the chemical reaction producing sodium hydroxide within the tissues. Fulguration was also employed with fair results, my first attempt being in 1917. The apparatus at that time being more or less uncontrollable and very impractical.

ELECTRICAL CURRENTS EMPLOYED

The agent employed is practically always some form of high frequency current. The various types are as follows:

Electrodesiccation and fulguration — Oudin current, referred to at times as sparking. Both

are desiccating. The desiccating is biterminal and the spark is hotter than fulguration which is monoterminal and does not require a second or inactive electrode.

Electrocoagulation — Surgical diathermy or bipolar endothermy—d'Arsenval current.

Electrocutting—Radio knife or Arc vision current. Fundamental knowledge of the various currents is essential and readily available and not within the scope of this paper.

Therapeutic Use. Electrodesiccation and fulguration may be used where the tonsil is practically all removed, a superficial layer of tissue or follicles, etc., remaining that requires smoothing down. To control superficial bleeding by withdrawing the needle or electrode from the tissues a mm. or two and sparking. Also to prevent adhesions between two surfaces, papillomata, small lymphoid hypertrophies, granulation tissue, fissures, etc.

Electrocoagulation or surgical diathermy is the current employed where deep destruction of tissue is desired about the needle or electrode which is inserted into the tissue or in contact with it and is the current employed in multistage electrocoagulation of tonsils. Heat is produced at the active electrode, which is due to the resistance offered by the tissues themselves to the passage of the current resulting in a dehydration and death of the tissue, the extent of which depends upon the amount of current used and the length of time employed. The resultant affected tissue I like to designate as the "coagulum" rather than the slough or dead tissue, etc. The electrode remains cool in contrast to the ordinary cautery which is hot, exerting the well known superficial action or burn. This current may be used to destroy tissue such as the gradual extirpation of the faucial or lingual tonsils or varix, fungus affections of the tonsils, postoperative tonsillar remains or lymphoid hypertrophies; various benign or malignant tumors; angiomata, nasal polypi, intramural coagulation of the inferior turbinate; coagulation of blood vessels in place of tying with catgut; liberation of adhesions, ciatrices, synechia, atresias, etc. The soft pliable scar following electrocoagulation is very desirable and minimal. The current can be used in preference to the cautery. Electrocoagulation is the current especially concerned with in this paper, in the multistage removal of tonsils.

Electrocutting of arc incision current has the combined effect of cutting and coagulation, both effects being controlled or modified to suit the individual requirements and conditions at hand. The arc which forms ahead of the electrode at a rapid rate volatilizes the tissue and separates it as though it were done by a knife. This current is especially advantageous to use in very vascular conditions where troublesome bleeding or hemorrhage is liable; in malignancies it offers the advantage of controlling the bleeding and the dissemination of cancerous cells and in infected tissue it minimizes the dissemination of the infection. This current may be used in one-stage tonsillectomies, coagulating the vessels at the same time, or using two separate electrodes, one coagulating and one cutting always in readiness without adjusting the machine. For further details see the writer's article, "Electrosurgery and the Otolaryngologist."[3]

Indications for Electrocoagulation of the Tonsils. 1. Postoperative tonsillar remains, lymphoid hypertrophy or regenerated tonsillar tissue. It is conceded by those having had experience with electrocoagulation that it is the method par excellence for these conditions. If instead of 73 per cent. of all tonsils showing postoperative tonsillar tissue requiring removal we consider 50 per cent. a conservative estimate, I maintain this condition alone justifies a place in our armamentarium.

2. Lingual hypertrophy and varix.

3. Various fungus affections.

4. Growths and malignancies.

The above are certainly more amenable to electrosurgery and electrocoagulation in particular.

5. Removal of the tonsils in conditions complicated by blood dyscrasias such as hemophilia, severe anemia, etc.

6. Various general conditions accompanied by serious involvement of the heart, lung and kidneys and in the presence of certain diseases such as syphilis, arthritis, and sclerotic changes.

7. The aged and infirm.

8. The many patients that refuse surgical removal.

A considerable amount of material is therefore readily available for electrocoagulation. I would recommend that the ethical practitioners

and especially the otolaryngologist become thoroughly acquainted with the use of electrosurgery and use it in properly indicated conditions. Irregular practitioners will no doubt continue to use the method, but improperly used their efforts will culminate in defeat. They have used other orthodox methods which in time have met a similar fate.

Limitations and Contraindications. Electrosurgery as advocated by the author is a safe, tedious, time consuming, ultra conservative procedure. It requires judgment, technical skill, patience and meticulate care. The multistage method advocated is the gradual extirpation of the tonsil destroying a portion at one time. Inasmuch as the method is employed where conservatism is of paramount importance, any attempt to destroy the entire tonsil at one sitting or large portions of it, defeats the very purpose for which we are employing the method. This is dangerous, not feasible, impractical. Further, to maintain the current and control to such an extent that it will follow around the various contours and limit itself to such a nicety as to stop precisely at the capsule in one sitting reveals lack of knowledge and insincerity on the part of the operator, and I do not believe it can be done. It is not applicable in children, extremely nervous or refractory patients and where local operations are contraindicated.

Selection and Preparation of Patients. The cases are properly selected. The tonsillar crypts are cleansed with 6 percent. phenol in glycerine and the debris and secretion are removed and 10 per cent. mercurochrome applied to the crypts. This may be done a day or so prior to the first treatment if desired while making arrangements with the patient. Instruction is given as to the method employed, the possibility of some discomfort, the time necessary, explaining in detail that it is a slow tedious method and that patience and cooperation are essential to success. The necessity to return at stated intervals, depending upon the amount and type of tissue to be removed, usually five or six and maybe a dozen treatments will be necessary. Time spent in doing this at the beginning will avoid "changing horses" in the middle of the

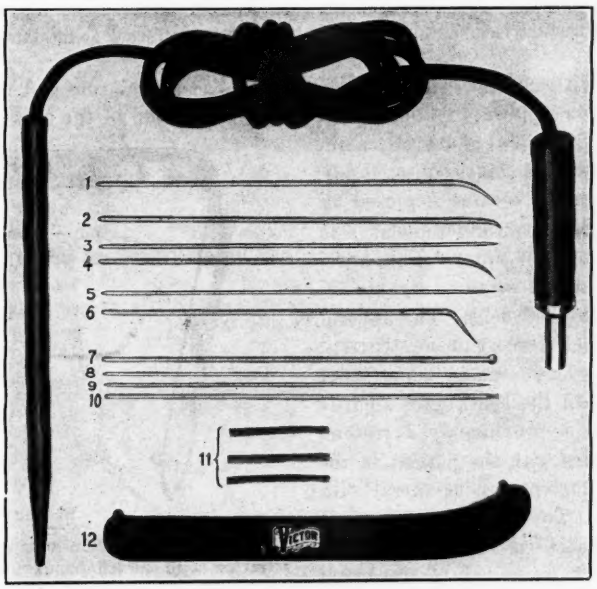

Fig. 10

Fig. 10. Author's universal diathermy electrode holder with electrodes and combination pillar rectractor and insulated tongue depressor. Needles of various shapes and sizes are used, according to the type and amount of tissue to be removed. It is to be remembered that the patient is on the side with the head of the table slightly lowered, thereby preventing aspiration of foreign material and permiting of an unobstructed view at all times.

stream. The treatments may be extended over a considerable length of time if more convenient to certain patients. (For more complete details see author's article, "Evaluation of Electrosurgery of the Tonsils.")[4]

Technique. The tonsil is swabbed with 1:1000 adrenaline solution to dehydrate the tissues. The surface of the tonsil and the interior of the crypts are swabbed with cocaine hydrochloride using a fine aluminum applicator tipped with cotton and moistened with 1:6000 adrenalin solution and the excess of moisture squeezed out. An infinitesimal amount of cocaine is picked up on the applicator without causing the flakes to go into solution by excess of water. This is repeated 2 or 3 times at two or three minute intervals which is usually sufficient. The apparatus is in readiness, electrocoagulation current employed, the reading on the meter being about 3,000 milliamperes with the spark gaps slightly open. This will give approximately a reading of 250-300 milliamperes with the patient in the circuit. Amount of current can be varied with conditions at hand. To the active electrode the appropriate needle is attached. The indifferent electrode is connected to the metal chair or the foil on which the patient is seated. The writer has developed a series of seven needles and a universal holder or handle and a combination pillar retractor and tongue depressor. (Fig. 10.) The holder will accommodate needles of various lengths and calibres which are held securely. The tongue depressor can be had in non-conductive and conductive material. (Fig. 11-12.)

The proper needle is selected for the type of tissue to be coagulated and inserted into the tonsil substance approximately four millimeters, depending upon the amount of tissue to be removed staying about four or five mm. away from the peripheral structures and avoiding sparking and surface fulguration, keeping the point toward the center of the fossa. (Fig. 13.) The foot switch is turned on, and in one to three seconds a blanched area will appear around the needle. The foot switch is released and the needle is removed. This process is repeated as many times as is necessary, usually six to ten contacts, depending upon the amount of tissue to be removed. A small area of unblanched tissue which is left between the punctures allows the coagulated areas to coalesce and prevents over-coagulation and the possibility of too early separation of the coagulum, thereby avoiding unpleasant complications. The amount of destruction following a moderate coagulation will surprise the beginner when the coagulum has cleared. The utmost precision is essential. The first trial should be very moderate to observe the reaction of the tissues as a guide to further treatment. (Fig. 14.) Should a bleeding point be encountered it may be readily controlled by sparking the area, withdrawing the electrode away from the tissue one or two millimeter. One may begin at the supra-tonsillar fossa area if desired where toxic absorption is probably most active. It is better to begin in an area around the middle of the tonsil if there is any likehood of the patient wishing to resort to surgery after a treatment or two, which elimi-

Fig. 11

Fig. 11. Author's combination tongue depressor and pillar retractor—straight handle (metal). May be used on either side, permitting the tongue to be depressed and pillars retracted at the same time.

Fig. 12

Fig. 12. Combination tongue depressor and pillar retractor with curved handle (metal). May be used on either side, permitting the tongue to be depressed and pillars retracted at the same time.

nates interfering with the surgical dissection should it be necessary. Subsequent treatments

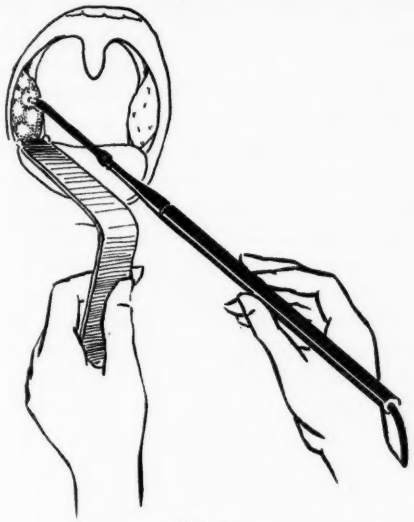

Fig. 13

Fig. 13. Schematic representation showing insertion of needle electrode and typical reaction with small area of normal tissue between coagulated areas. Combination tongue depressor and pillar retractor is shown.

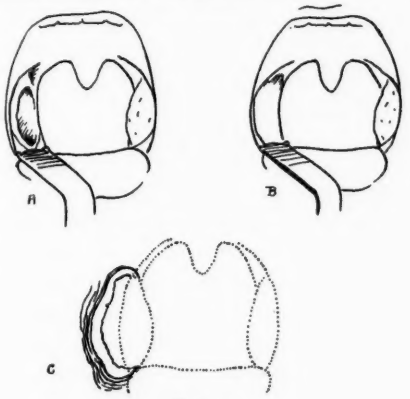

Fig. 14

Fig. 14. Schematic representation showing:

A. Amount of tonsillar extirpation after first treatment.

B. Apparent complete removal of tonsil after several applications, plica-triangularis removed and pillars undamaged.

C. Same tonsil above (b) with full retraction of anterior pillar showing small amount of tonsillar fundus remaining to be removed.

to the same tonsil can be given in ten days as it takes this long for the coagulum to clear. One may hurry the amount of tissue coagulated at a sitting but the intervals between treatments cannot be shortened. The other tonsil may be treated in four or five days after the first one. Topical anesthesia is employed purposely and there is likelihood of some discomfort and pain. Statements to the contrary reveal insincerity. The amount of pain however is usually negligible and varies with the individual. Infiltration anesthesia is purposely avoided because it dissipates the current and renders it uncontrollable. The water logging of the tissues necessitates the drying out of the tissues during the procedure and an undesirable reaction follows such as swelling, edema, pain, etc. Occasionally nerve block is resorted to when nearing the capsule during the final treatments, but generally tabooed for reasons previously stated. "Vocal" or "oral" anesthesia has its place. However, the time being from one to three seconds during each coagulated area the discomfort is only momentary. I have used sphenopalatine anesthesia in my private cases with abundant satisfaction, a report of which will appear in the literature shortly. The time required to obtain anesthesia is a disturbing factor and usually necessitates one especially trained to employ it.

Complications possible. It is possible to have discomfort, secondary hemorrhages, infection, incomplete removal of the tonsils just as with any other means of tonsil removal, and especially if the same painstaking care is not adhered to as is usual with good surgery, and improper technique is employed. The writer has had practically no disturbance with complication, no doubt due to the conservative method employed. There are tonsils that are unsuited for electrocoagulation and this phase of the procedure will be considered thoroughly at a later date.

Electrocoagulation does not replace surgical tonsillectomy. Electrocoagulation is not offered to replace surgery in the removal of tonsils. The average tonsil can be removed rapidly and cleanly with little or no inconvenience to the patient or surgeon, especially if the cases are properly selected and the proper attention given before, during and after the operation. The risk to the patient is practically nil with a good operator. How ridiculous it would be to subject the average patient to the slow, tedious, time-consuming method when the tonsils could be slipped out in a few minutes under local. Economically there is no advantage to be offered in the average case. Postoperative tonsillar re-

mains, very sessile tonsils, markedly atrophied tonsils that can be easily manipulated are satisfactory cases for electrocoagulation. Should a portion of the tonsil show up after removing it surgically it is a very simple matter to remedy it with electrocoagulation. No method is ideal, but the combination of surgery and electrosurgery is a means of approaching the ideal. Surgery will continue to be the method of choice and where it is contraindicated electrosurgery may be considered as an appropriate and scientific aid to classical surgery. The surgeon should be equipped, therefore, to use the method best suited for the conditions at hand and not to be limited by lack of ability, knowledge, nor equipment.

Diathermocryptectomy. (Fig. 15.) I have always maintained that nothing short of the total

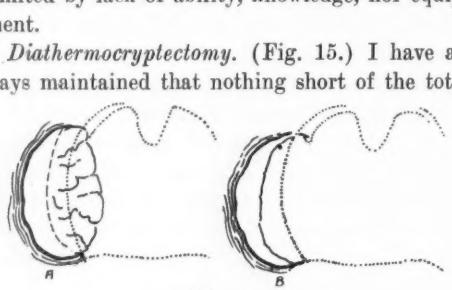

Fig. 15

Fig. 15. Author's Diathermocryptectomy.

A. Broken line showing cryptic bearing area to be removed by coagulation. Dotted line showing outline of anterior pillar, uvula and base of tongue.

B. Same tonsil (a) after removal of cryptic portion.

removal of the tonsils should be considered when the tonsil is diseased and the surgical removal attempted. My reason for this is that incompletely removed tonsillar tissue following the surgical removal usually becomes scarred over with ciatricial contraction and anatomical distortion. The physiological function is greatly interfered with and the possibility of continuation of a potent focus of infection. The same conditions are not at hand when diathermy is employed. The contraction and scarring following the latter method is infinitesimal with apparently no distortion in glandular tissue. The crypts can be followed down to their normal termination. It is usually a simple matter to remove the cryptic bearing area of the tonsil down to the fundus of the tonsil. I have had many patients, some of whom had very hazardous conditions, who refused anything more than removal of the cryptic portion. The results were ideal. No trauma to adjacent structure need ever occur.

In view of the fact that 75 percent. of all surgical tonsils are and have been incompletely removed, I believe the removal of the cryptic portion is a justifiable and worth while procedure in certain hazardous conditions. It can be done usually with little discomfort or inconvenience. The time element is negligible. I have termed this procedure "Diathermocryptectomy," a descriptive name, namely, the removal of the cryptic portion of the tonsil by diathermy current.

Every vestige of tonsillar tissue can be removed which requires infinitely more time, care and experience. The above is a simple procedure and certainly more reasonable than a badly mutilated throat following a poorly executed surgical tonsillectomy. It has been repeatedly brought to my attention that most patients experience a decided relief from the toxic absorption as evidenced in their general improvement in health after two or three treatments of coagulation. This is no doubt due to the sterilizing effect of the tissues in addition to removal of a certain amount of the cryptic area and cessation of toxic absorption accordingly. Further, the sterilized tonsillar tissue remaining in situ with its bacterial flora probably acts similarly to that of an autogenous vaccine causing a defense reaction to ensue.

CONCLUSIONS

1. The control of tonsillar bleeding in accordance with the basic principles of general surgery is very essential in the removal of tonsils.

2. Faulty operative position and lack of definite precise technique is greatly responsible for the majority of unsatisfactory postoperative results in tonsillectomy.

3. A technique is offered that enables the operator to control the situation at hand.

4. All tonsils are suspicious, especially in adults.

5. There can be no doubt as to the beneficial results attendant on the proper removal of diseased tonsils.

6. Electrosurgery and electrocoagulation in particular do not replace surgery in the removal of tonsils. It is better suited to certain selected cases.

7. No method of tonsil removal is ideal. The combination of surgery and electrosurgery is a means of approaching the ideal. Surgery will

continue to be the method of choice, and where it is contraindicated, electrosurgery may be considered as an appropriate and scientific aid to classical surgery.

8. The surgeon should be equipped to use the method best suited for the conditions at hand and not be limited by lack of ability, knowledge, nor equipment.

9. Diathermocryptectomy or removal of the cryptic portion of the tonsil is a commendable, worthwhile, simple procedure to be considered under circumstances where a conservative procedure is indicated or necessary.

10. Electrocoagulation is a safe, tedious, time consuming, ultraconservative procedure requiring judgment, technical skill, patience and meticulate care.

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HEART LESIONS CAUSED BY CHEST INJURIES*

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The medico-legal phases of the problem of cardiovascular effects produced by direct or indirect violence from without often cause considerable difficulty to be placed in the path of the compensation boards and medical men concerned in a case and the clinical effects may be so out of proportion to the anatomical changes that a discussion and practical consideration of a few of these cases will be profitable as an aid in estimating the ensuing disability and compensation liability.[1]

There is often difficulty in deciding whether indirect injury to the thorax is able to induce temporary or permanent damage to the heart and doubt must frequently be registered as to whether a cardiac irregularity or cardiac pain, or other symptom or symptoms of myocardial involvement are due to a specific injury in the course of employment, or an aggravation of a pre-existing cardiac condition. The question is also often raised as to whether the injury or strain superimposed on a damaged heart produces the effect of which the patient complains.[2] The law does not hold that an employer is free from responsibility even though the heart was impaired previously. This paper will cover some of the more common symptoms and pathological cardiac complexes that occur in chest injuries and by no means is intended to cover all of them comprehensively.

The heart and pericardium lying in the chest in close relation to the cartilages and directly behind the sternum subjects it very readily to crushing injuries or an external force producing contusion or concussion and no doubt the same pathological and neurological changes can occur in the heart as in corresponding injuries to the lungs, liver, kidneys or spleen. Several factors may enter into the character of the lesion produced, such as the status of the heart cycle, the resistance and resilience of the chest wall, and the character and direction of the force causing the injury.

Kahn classifies the principal types of heart lesions that occur in consequence of direct and indirect violence as follows:

I. Direct injuries:
A. Contusion and concussion of the thorax.
1. Injury to the pericardium.
2. Auricular fibrillation.
3. Entrasystolic arrhythmia.
4. Heart block.
5. Injuries to the valves of the heart.
6. Injury to the aorta.
7. Injury to the heart musculature.
8. Rupture of the heart.
9. Miscellaneous types.
B. Penetrating wounds:
1. Fatal.
2. With recovery and post-traumatic effects.

II. Indirect injuries:
A. From without, such as falls with no direct injury to the chest.
B. Heart strain.

These accidents may occur from mine falls, slate falls, tripping and falling on the chest, contra coup by a fall from a height, being run over by a car or being caught between two cars, or a car and a post or building.

A severe blow on the chest or a severe fall on some object may contuse the precardial tissues and even the parietal pericardium and may be mild with complete recovery in a few days. In some cases it may last for several days and produce severe incapacity and permanent pain and

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distress. Some of the symptoms in these cases may be due to the displacement of the heart and mediastinum and consequent arrhythmias, recurrent dyspnea, palpitation and pain after exertion. These cases are especially difficult to evaluate in a legal case as the symptoms may be out of all proportion to the extent of the original injury.

In contusion of the chest the injury is much more severe and the acute symptoms of shock with paleness, weak thready pulse and shallow respiration may be present. Blows near the heart are more serious than in other parts of the chest and boxers know that a blow over the heart may mean a knockout. In severe cases, associated with shock the prognosis may be grave.

Pericarditis. Acute fibrinous pericarditis, with or without effusion, often occurs after pericardial injury, such as a sudden fall, striking an object or the edge of the steering wheel of a car. Usually several hours after the accident the patient complains of severe pain in the chest, dyspnea and a slight rise in temperature. With the history and the subsequent clinical course these cases usually offer no difficulty in diagnosis.

The recovery may take place without adhesions, or the dyspnea, palpitation and tenderness may persist or even be permanent. Mrs. P., aged 42, was caught between her car and the garage door, crushing the chest mildly, causing her to sit on the running board for several minutes before she could get her breath. She then drove downtown and went to the theatre. Six hours later she became dyspneic, the pain increased post-sternally, her heart palpitated and in ten hours the pain was so severe as to require morphia. Pulse was regular but weak, temperature 99.2. Heat was applied over the precardium. Two days later the pain was less severe but on percussion a typical pear-shaped area was found and a diagnosis of pericarditis with effusion was made. Aspiration yielded 300 cc. of clear fluid and the patient made an uneventful recovery.

Cardiac Pain. Whenever there is a severe injury to the precordium, myocardial damage cannot be ignored as a possibility, and if ribs are fractured or a penetrating wound has occurred, the suspicion is even more pronounced. When violence is followed by cardiac irregularity and pain, injury to the myocardium must be looked for carefully. The pain has no particular characteristics but may radiate to the axilla or lower left chest. The heart tones may be deficient in muscular quality with lessened heart sounds and a persistent rapid heart without fever is significant, as are an irregular or variable pulse. The cardiac pain may be severe and acute, lasting only a short time and gradually disappearing or it may be mild and persistent. Pathologically the pain may be due to adhesive pericarditis, as shown above, or may be due to definite changes in the heart muscle and coronary arteries as a result of the injury. Sutton and Lueth[3] show by experimental work that cardiac pain may result from insufficient nutrition to the heart muscle, probably due to an insufficient flow of blood through the coronary arteries. It may also be due to a sclerotic narrowing of the lumen and so much less exertion may result in sufficient interference with the blood flow to cause pain. In some cases the sclerosis is not sufficient to account for the pain, and in these cases the phenomenon of pain may not be obstructive but rather due to a spasm of the coronaries, although sclerosis of the smaller vessels has not been excluded. This may account for the persistent pains that occur after a blow or severe contusion over the chest. Lack of response by the coronaries to increased exertion by dilating and allowing increased blood flow may explain why dilator drugs relieve the pain in some of these cases. Temporary occlusion of the coronaries has caused temporary or intermittent pain, as was shown by dog experimental work and the pain is transient, as differentiated from the continued pain of coronary thrombosis. This transient or temporary spasm of the coronaries may follow a trauma of the chest due to the effect on the innervation of the coronaries. Mr. L., miner, aged 55, with no previous history of cardiac trouble, fell by tripping on a wire in the mine in such a way that his dinner bucket was under his chest. He had severe pain over the precordium and "his wind was knocked out." He continued to work but was weak and short of breath. Pain, mild in character, persisted for several weeks. Examination made two months later on account of persistence of pain and dyspnea, showed a marked irregularity of the pulse, with dyspnea and weak, muffled heart sounds. No murmur present. Exercise tests showed that the myocardium was weak. There were no symptoms or signs of pericarditis. The heart showed a moderate dilatation to the left, apex beat not visible or distinctly palpable, rate 68, no change in second aortic. Blood

pressure 134/76. Electrocardiogram showed a cardiac irregularity, left ventricular preponderance, inversion of T. wave slurring of Q R S wave and sinus arrhythmia. The patient developed fibrillation in two months which caused increased pain and dyspnea. On treatment with benzyl-benzoate and nitrites his symptoms became less and he was able to do light work. Diathermy over his cardiac area will control the fibrillation, increases the pulse rate, and lessens the pain, but digitalis has no effect on his condition. A diagnosis of acute coronary insult followed by myocarditis and possible coronary spasm was made.

Fibrillation. Fibrillation has already been alluded to above and often occurs in an injury to a previously damaged heart,[4] but whether it can occur in a previously normal heart is still in dispute. However, it occurs after chest injuries and aside from its mediolegal aspects, demands attention. The pathological changes that underlie this phenomenon also cannot be stated with any degree of positiveness. Kahn suggests the possibility of a subpericardial ecchymosis in the auricular muscle. Dyspnea, palpitation, precordial pain and a persistent cough are symptoms. Once established the recurrence or permanence of the fibrillation is likely. The possibility of rheumatism, syphilis, arteriosclerosis, toxic goiter or other toxic conditions must be ruled out before it can be definitely attributed to the injury. The history previous to the injury is very important in differentiation. Myocardial failure due to the increased output of the heart is often a consequence of fibrillation and must be borne in mind in estimating the damage to be assessed under the compensation laws.

Arrhythmias. Extrasystolic arrhythmia usually follows focal myocardial irritation due to small pathological areas in the heart muscle or to coronary changes. This is characterized by premature beats that interrupt the normal heart rhythm. Cardiac strain, blows to chest or falling cause this phenomenon. Excluding any other cause for this condition, one must consider the relation of cause and effect. As possible factors toxic or infectious conditions, arteriosclerosis and neurological influences must be eliminated. Here again, as in fibrillation, the clinical relationship between the accident and the onset of the irregularity is the deciding factor. The symptoms are usually described as a "jump in the heart," a "flopping heart" or a "sudden turning over." There may be a dizzy spell, a choking sensation, or a definite dyspneic distress, or even momentary pain. The locus of origin may be determined by the electrocardiograph. The condition may be mild, with recurrences over years, or may be severe and lead to total disability and incapacity. The possibility of myocardial changes getting progressively worse must aid in the prognosis.

Miss H., aged 31, saleslady, fell over a bundle of hardware and pulled a roll of linoleum down on her chest. Previous history negative. Had never had any heart condition and had been repeatedly examined for insurance. Two days were spent in bed due to the pain in the chest on moving. Three weeks after the injury she noticed a slight sharp pain several times a day over the cardiac apex but no irregularity. She was examined two months after the injury and many premature beats were present, some coming singly, some in pairs. Six months after the injury she showed a dilated heart to the left, swelling of the feet, weak heart tones, frequent extrasystoles and electrocardiogram negative except for the irregularity and inversion of the T. wave. On rest and digitalis the patient has improved but is at present unable to work. This illustrates one of the borderline cases where the cause and effect are extremely hard to relate and yet the evidence is so presumptive in favor of the relationship as to make it likely.

Heart Block. Being usually an end phase of any form of cardiac pathology it will not be necessary to more than mention this condition. However Rosenson[4] reports a case of temporary acute heart block following a blow over the precordium in a boy of ten years.

Valvular Lesions and Heart Rupture. These both follow severe injuries to the chest and are comparatively rare and may or may not presuppose a previously unhealthy heart, or may be due to peculiar conditions present during the accident or the character of the blow or pressure. Compression of the chest in deep inspiration may rupture the aorta or aortic valve or a fully distended ventricle sustaining a crushing blow may tear a valve or several valves may be injured simultaneously. When sudden death does not intervene, the recovery may be long and tedious due

to the ecchymosis present and the liability of aortic atheromata and scars developing.

The symptoms and signs are those of sudden intense cardiac insult followed by the characteristic signs of the region affected. In ruptures of the mitral valve, valvular sclerosis may ensue with its characteristic signs, due to scar formation and distortion in the valve. Allbutt[5] cites such a case following the kick of a horse over the precordium. The prognosis must be guarded and recovery may be slow and incomplete. Those cases having a history of pre-existing valvular lesion give a better prognosis, bearing in mind the incapacity based on the previous lesion before the injury. In aortic injuries aneurysm is common, both in the descending, ascending and abdominal portions. In aortic lesions syphilis must be definitely excluded as a predisposing cause. Aggravation by trauma of a pre-existing aortic lesion may be the basis for a legal award. Rupture of a pre-existing aneurysm may occur. In cardiac rupture and stab wounds of the heart prompt surgical intervention may save the life of the patient. It is amazing at times the extensive injury that the myocardium can withstand with recovery and few clinical signs afterward manifest themselves. This type of injury is nearly always due to bullet or stab wounds but spontaneous rupture can occur as a result of violent injury, is usually fatal in a short time and is due to intrapericardial pressure inhibiting the action of the right auricle. Incomplete rupture may occur with subsequent healing and myocardial scars, which produce the same train of symptoms as mentioned under "Cardiac Pain" and the same prognosis. Delayed rupture with death is also a matter of record. Morgagni's rule holds good, however, that a complete rupture never occurs through the sound heart muscle.

Prognosis. The prognosis in cardiovascular lesions following injury depends on the degree of disturbance of circulation produced by the defect. If the first shock is well born, then the prognosis depends on the size of the defect, the condition of the myocardium and coronary vessels, and the degree of healing and recuperation present in the injured part. At times the cardiac activity is undisturbed for a short period of time and later sclerosing and atrophic changes, adhesions or vascular changes may produce disabling symptoms and functional lesions. The possibility of cardiac insufficiency and failure ensuing in the future must be kept in mind in formulating the prognosis.

Legal Conclusion. The following facts must be borne in mind when considering the disability from a compensation standpoint:

1. The heart trouble may have been present before the accident and was not influenced by it.

2. The accident had only a transient effect and subsequent permanent developments of a cardiac nature may postdate the injury.

3. Heart trouble previously present may have been aggravated or exaggerated by the accident. We may assume that if a man was able to do his normal work, then suffered an injury to the chest followed by a cardiovascular incapacitating lesion, the lesion must be considered the result of the aggravation of a previously symptomatic or non-incapacitating lesion.

4. Cardiovascular lesions following within a reasonable time injuries to the chest, excluding any other reasonable cause for the lesion, may be assumed to be the result of damage to a previously normal heart.

5. The time between the accident and the symptoms causing the disability is usually short. The longer the time between the accident and the onset of the disabling lesion the less likelihood is there that the causal or aggravated lesion is the result of the injury. In other words, the relationship between the two must be clearly established. Reappearance of symptoms and signs of recurrence should be attributed to the original injury or lesion.

6. Even in severe alterations in the heart the findings by physical examination and observation may be slight and a severe injury to the heart may result from accidents that leave no trace of injury to the chest.

7. Traumatic cardiac neuroses do not enter into consideration in this paper, since the discussion is limited to actual physical injuries.

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DISCUSSION

Dr. Walter S. Priest (Chicago): I would like to

ask Dr. Meixner if he has used quinidine in attempting to control these irregularities?

Dr. N. S. Davis III (Chicago): I have seen a few cases of indirect trauma to the heart, perhaps with contusions of the chest wall. In one case it seems quite evident that there was a direct cause and relationship. A man playing handball, when going after a ball, crashed into a wall and almost immediately afterwards had collapse and symptoms very similar to those found in coronary occlusion. He had a fibrillation for a while and has been rather completely disabled since.

Then there is another type of case that was mentioned at the close of the address, where a man has a contusion to the chest wall, an older man particularly, and then three or four days later develops symptoms of cardiac trouble, which it is quite evident is due to a coronary occlusion. It is very difficult to prove definitely a relationship between the trauma and the heart lesion. Those are cases that must be considered from a medical-legal viewpoint.

We had one in the hospital this winter. A watchman was chasing someone and had a contusion of the chest wall. He was all right for two or three days and then commenced to have symptoms of coronary disease. He was brought into the hospital and we made a diagnosis of coronary occlusion and said that it was questionable, because of the time interval, as to there being any connection with the trauma. He was afterwards removed to another hospital and died. There was a postmortem which proved coronary occlusion. The question now comes up whether the trauma had any association. There was an interval of three or four days between the trauma and the development of the heart symptoms.

Dr. Charles R. Wiley (Chicago): I think the doctor is to be congratulated for bringing forward this subject, because undoubtedly it is a factor in heart disease. This case that Dr. Davis has just referred to was transferred from the Alexian Brothers Hospital to the Norwegian-American Hospital. I had the opportunity to see this old gentleman and quite definitely, from the history, the symptoms began with the traumatic insult. Of course, because of his age there was a diffuse and a generalized arteriosclerosis. However, at necropsy there was a thrombus high up in the left coronary, but no visible evidence of trauma in the precordium, or of damage to the ribs or to the adjacent structures. The time elapsed from the trauma to his arrival at the second hospital was such that if there were any superficial marks from the blows, they would have disappeared.

The possibilities that the Doctor brought forward must be thought about, and as Doctor Davis suggests they are mighty hard to prove. Insurance claim has been made in relation to this old gentleman's death. I am wondering now how those of us who are interested in the case are going to attempt to prove traumatic relationship. Necropsy disclosed a general arteriosclerosis and all the picture that goes with that disease.

Dr. E. E. Davis (Avon, Illinois): I am very much interested in this paper and especially so because of a case that I had very recently, a man fifty-eight years old. He developed some shortness of breath and some cardiac trouble, but as he was a laboring man had worked right along all the time. In April he had a slight fall in which he jumped from a ladder, lighting first upon his feet and then falling upon his buttock. He was knocked out of breath and for a few minutes was very short of breath. He got up and went about trimming the limbs off the tree from which he had fallen. He was apparently getting better, but the man for whom he worked took him home in an automobile. He stayed in the house for an entire week. I saw the man only once, just a few days after he was incapacitated, and I found his heart was not good. One week later he died very suddenly of what I diagnosed as a coronary thrombosis. I just wonder what relation there might be to the trauma of the fall and the oncoming coronary thrombosis.

Dr. S. E. Munson (Springfield, Ill.): I think this is a very timely paper by the Doctor, because so infrequently does one hear the subject of heart disease discussed from the standpoint of trauma. In any symposium on heart disease I know it is not often that one has the opportunity to hear a paper on injuries to the heart by direct violence. There isn't any question about the frequency of these accidents. I think the important thing to stress is the lateness of the time between the accident, which the Doctor mentioned in his cases, and the sympoms which came afterwards. That would be a matter that even the good clinician may overlook.

Probably some of us have had an opportunity to see cases of this character sometimes without making a diagnosis on account of the lateness of the trouble. Almost all of us have known that trauma may cause serious conditions of the heart. I recall seeing a case myself where a man had had a blow. This was in a heart case where there was a rupture of the mitral valve. The changes in the heart made this diagnosis positive beyond any chance of the possibility of anything else having caused it.

I think that the Doctor is to be commended on presenting this paper, and particularly on the character of the cases which he has had.

Dr. Fred M. F. Meixner, Peoria (closing discussion): I will answer the last question first. As I mentioned in the paper, the coronaries are very frequently affected in sudden exertions or in sudden falls. If there should happen to be a lesion making those coronaries susceptible to rupture, of course you would get a coronary thrombosis owing to a rupture of the intima, and you would get a history of coronary thrombosis. On the other hand, you may have had an aneurysm of the ventricle, with subsequent rupture, or a pericarditis, with subsequent rupture of the auricle.

I have used quinidine. In some cases you get an effect and in some cases you don't. The question of what causes these irregularities, I think, is the key to what you can use. When the irregularity is due to a ventricular proposition—that is, a myocarditis, a developing of an injury to the small coronary vessels

with later scar formation—then, of course, you have a definite pathological process.

Wharton and Clausen say there are even acute hemorrhages occurring in the myocardium which produce scars and cause irregularity. If you get an irregularity due to scar formation, I don't believe that quinidine will do as much good as dilators. If dilators upset the patient, then the use of theocalcium or any of the other theobromine derivatives will give better results perhaps than quinidine. On the other hand, if you get an auricular-ventricular syndrome, with irregularity and fibrillation, then I think quinidine gives a little better results.

Dr. Davis brought up the question of myocarditis in this case, and that opens up that big field of nitrites and muscular response. There has been a great deal of work, as I mentioned, done by Burgess and by Sutton and Lueth at Northwestern, and other men are working on the problem of correct treatment. Sutton, in a recent issue of the Journal A. M. A., wrote an article on "Treatment with Digitalis," not in the ordinary therapeutic sense, with digitalization, but in small continued doses of one, two or three grains, over a long time, giving a supporting action to the myocardium, which will bring some of the cases around, especially those with diffuse myocarditis, which would not be the case with any other therapy.

Arsenicals and potassium-iodide, especially in the case of syphilis, are used; but the main treatment is the one that we have always had for chronic heart lesions of any kind—that is, rest, fresh air, good food, and at times a change of climate. Some of these patients do better when going to a warm climate in the winter, while other patients do better when leaving a warm climate and coming into the invigorating air of the North. That is the thing that has to be thought out in each case.

On the question of heart neuroses occurring in these injuries, that was not in the phase of the paper and therefore was not discussed. It is a fact that you do get neurosis associated with actual traumatic injuries. You have to use bromides—nerve sedatives—and other therapeutic methods to overcome the neurotic condition.

IMMUNE SERUM FOR THE TREATMENT OF POLIOMYELITIS*

H. A. Orvis, M. D.

WINNETKA, ILL.

In the past we have all, I think, received reports of poliomyelitis with dread. We have felt sure it was an acute infectious disease that was communicable, yet few contacts developed the disease and quarantine regulations have had little effect that could be demonstrated.

We have some where in the country each year areas where poliomyelitis is epidemic. Massachusetts and California had high incidence this last summer. In Europe, Alsace, Belgium and Holland reported epidemics. In Illinois we had 88 cases in 1929 and 410 in 1930. So far this year we have had 44 cases as against 17 last year. We are showing an increased incidence and one that has held over into fall and winter months. This suggests that we had best be prepared for more cases the coming summer and fall. There has been a vast amount of research in poliomyelitis and some of the more recent work is especially interesting and valuable.

Aycock and Kramer have shown by neutralization tests on sera of 75 normal individuals, without history of poliomyelitis, that half of them neutralized the virus of poliomyelitis. This we might conclude indicated that half of this group was immune. Classifying them into urban and rural groups we again get an interesting observation. The urban group of 46 contained 32 or 69.6 per cent. which neutralized the virus while 14 or 30.4 per cent. failed. The rural group of 29 contained 6 or 20.7 per cent which neutralized the virus and 23 or 79.3 per cent. who failed. No immune sera was found in the rural group below ten years of age, while in the urban group many children below this age showed immunity (Journal of Preventive Medicine 4: 177-259, May, 1930).

Shaughnessy, Harmon and Gordon report serum of normal infants six months to two years seems almost devoid of neutralizing properties. They also show that many normal contacts of poliomyelitis have sera with high neutralizing properties against poliomyelitis virus as well as many normal adults who have not had contact with poliomyelitis. (Journal of Preventive Medicine, Vol. 4, p. 472.)

This would lead us to believe that a large percentage of our population is immune to poliomyelitis. That this percentage starts from zero at two years of age and increases up into adult life. Also that the percentages are greater in the city in various age groups than in country. Aycock suggests in discussing the epidemology of poliomyelitis that at times a community may possess a virus reservoir which is the throats of a large number of people who harbor the virus for a relatively short time during which by far the greatest proportion of these individuals ac-

*Read before the Section on Public Health and Hygiene of the Illinois State Medical Society, May 6, 1931, at East St. Louis.

quire an immunity without showing obvious signs of the disease while a few may be typical cases of poliomyelitis. He says no evidence has been found that the virus reservoir may be largely in chronic carriers. No instances are known where one individual seems to have been responsible for the transmission of the virus to any number of others over a considerable length of time. (Journal American Public Health Assn., Vol. XX, p. 41.)

In the California epidemic of last year it was estimated that 80 per cent. of total infection was not recognized. (Jour. A. M. A., Vol. 95, p. 418.)

Recent research by Fairbrother and Hurst of the Lister Institute of Preventive Medicine indicate that the previous conception of infection through the naso-pharyngeal mucosa and transmission by axis cylinders to the central nervous system is correct. (Jour. A. M. A., Vol. 95, Sept. 6, 1930.)

From the preventive standpoint we are not prepared yet to advise any proven procedure. There is some work, however, by Rhodes of Rockefeller Institute showing immunity in monkeys produced by injections of virus absorbed in aluminum hydroxide. This is as yet only in the experimental stage.

It is interesting to note the official report of the Alsace epidemic by the French regarding both morbidity and mortality. Their series of 405 cases in 1930 had a mortality of 10 per cent. The morbidity and mortality by age groups was as follows:

	Morbidity	Mortality
Up to 6 years	84%	7½%
6 to 16	11%	16%
16 plus	5%	20%

Only five cases were reported beyond age 21 (Jour. A. M. A., Vol. 96, No. 2, p. 226 and p. 117.)

In California, 1930, the morbidity was as follows:

Up to 10 years	1000 cases
10 to 15 years	301 "
15 to 35 years	334 "
35 to 45 years	35 "
45 to 55 years	10 "
Over 55	3 "

Here 23 per cent. were above fifteen years of age. The remarkable variation here is the much higher incidence in California above 15 years of age. The morbidity in general decreases as age advances, but rate of mortality increases as age advances.

Our only attack against this disease at present seems to be to limit its course after it is established.

The serum from immunized horses or other animals has not been accepted very largely in this country. In France, however, a considerable degree of success is reported by the followers of Pettit who has developed a method of immunizing the horse. The general opinion here is in favor of convalescent or normal human serum. Work along this line has been done in Boston, New York and San Francisco. McNamara of Australia also has done considerable practical work in furnishing convalescent serum. The Commonwealth Serum Laboratories of Melbourne obtain, prepare and distribute convalescent serum. The George Williams Hooper Foundation for Medical Research of the University of California obtained from 202 donors 19,750 cc. of convalescent serum. This they distributed to physicians for injection in newly diagnosed cases.

The report on results sums up their experience as follows: "The value of this serum is apparently well established and of practical therapeutic importance even in the absence of controls." (Jour. A. M. A., Vol. 96, No. 2, p. 117.)

The preparation of convalescent serum is from donors over ten years of age who have had at any time previous a case of definite poliomyelitis. This blood, of course, must show a negative Wassermann. The amount of blood donated is usually not greater than 250 cc. and less in young donors. The serum is separated, tested for sterility and a preservative added, then it is bottled and placed in refrigeration. The virucidal property is retained for three years, according to McNamara.

The efficiency of immune serum in treatment of poliomyelitis depends upon early administration. This is turn depends upon early diagnosis which is not easy. If the serum is given before paralysis sets in, the result is much more satisfactory. Dr. Thalheimer of Chicago thinks we should be able to give the serum before paralysis in many cases. Dr. McNamara, of Melbourne, thinks it may be given up to 24 hours after paralysis develops.

If given before paralysis develops a single dose may be sufficient but it may take a second or third dose to arrest progress of paralysis if

given after paralysis is evident. Dr. Thalheimer believes that if the preparalytic symptoms of poliomyelitis exist a spinal puncture should be done at once and if the fluid is sterile and with an increase in number of cells we should assume poliomyelitis to be the diagnosis and give the convalescent serum without delay.

Dr. Parks of New York suggests the following conditions that should be observed:

1. Early and prompt diagnosis and treatment.

2. Intraspinal injection of immune serum.

3. Intravenous or intramuscular injection of this serum.

4. Serum should have been collected from cases which have passed through an attack of poliomyelitis.

In children the dose is 10 to 20 cc. intraspinally and 40 to 80 cc. intravenously. If given before paralysis these injections may be sufficient; if not, intraspinal injections may be repeated. (Newer Knowledge of Bacteriology and Immunology by Jordan and Falk.)

This method of treatment being rather new has not a mass of statistics built up to prove its value. It is, however, adjudged by those who have worked with it as being of undoubted value. This judgment is reached by several groups working independently, viz., Boston, San Francisco and Australia. Inasmuch as we have had previously no effective weapon against poliomyelitis it seems imperative that physicians in medicine and public health prove the value of convalescent serum and perfect its application.

On public health officials falls the burden of obtaining and keeping available stocks of serum and this is far from simple. The obtaining of donors and preparation of the serum requires time and expense. So far this work is attempted only by endowed institutions. Those of us in health work who have access to records of past years have the record of cases of potential donors. These must be consulted and the object of the movement explained. Some of these will consent to give blood free or for a small consideration.

The practical value of convalescent serum demands a depot of serum available for emergency use. Two such depots are proposed in Illinois, one in Chicago and one at the State Department of Health.

Dr. Thalheimer, who is endeavoring to develop the depot in Chicago at Michael Reese Hospital, is experiencing difficulty in obtaining donors in sufficient number to build up an adequate bulk of serum. My discussion with Dr. Thalheimer brings out the evident conclusion that if we are to expect that we may draw upon either pool of serum, we must expect to donate to that pool. If I can obtain donors who will contribute 800 cc. of convalescent serum and a like amount of adult normal serum between now and July 1, I will feel free to draw upon the pool for ten or twelve cases this summer and fall before my credit is exhausted. If I have no need for it the serum will be used where needed and the credit will remain for fresh serum at a later date.

The success of the pool depends upon large numbers of donors scattered over a wide area. Then a high incidence in any town may be treated from the pooled serum contributed by many communities. It will be simply an insurance in which we pay our premium in immune serum regularly and have our incidence of poliomyelitis covered when it may occur.

The unfortunate thing is that most cases of poliomyelitis are in the ages below ten. It is not very profitable to use donors below ten. Hence we will have to wait until they are old enough to act as donors. It will be wise, however, to impress upon the parents of recipients their obligation as donors at a later period.

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1. Serum from convalescent cases of poliomyelitis or immune normal persons is as yet our only means of attacking poliomyelitis.

2. Its efficiency depends upon early diagnosis and treatment.

3. If we are going to have this material available when needed there must be laboratory centers where pools of serum may be collected, prepared and distributed.

4. The efficiency of serum depots will depend upon the cooperation of public health workers in obtaining donors.

DISCUSSION ON PAPERS OF DRS. H. J. SHAUGHNESSY AN H. A. ORVIS

Dr. Ralph C. Hamill, Chicago: I would like to ask if there is any opinion on the intraspinous injection of

the serum, as to whether that is in the same situation perhaps as the anti-luetic treatment is, that the intraspinous treatment is resorted to much in the same way that the hypodermic injection or intravenous injection is given before the method is discarded. In other words, it is more difficult, it is more dangerous, it is less commonly used. If the serum could be swallowed, everybody would do it. If it has to be injected in the spinal canal, only certain people who are going to do it, and it seems to me that all these treatments have to go through a certain period of testing out before any one of these methods is discarded. And I wonder whether the intraspinous method has been actually proven scientifically or experimentally to be more efficacious than the intravenous or possibly the intramuscular injection. Also if it is more efficacious whether, as was mentioned by Dr. Shaughnessy, it being merely an irritation of the spinal membrane, setting up, in other words, a marked myelocytosis in the spinal fluid, it is considered the efficacious element rather than any antibodies of specific immunity as being the efficacious agency. In the treatment of syphilis it certainly is a question whether the arsenic or the mercury that was injected into the spinal canal was the efficacious element or whether the fact that the spinal fluid that was returned through the serum was highly irritant and so set up a marked myelocytosis in the spinal fluid, whether that was the efficacious agent, just exactly as we were taught many years ago in skin disease, if you had a chronic condition of the skin you applied an irritating ointment; so with syphilis, being a very chronic process, being made by the increased blood supply, I wonder whether this acute infection type of thing, which is tremendously inflammatory, of the acute infectious type, an enormous increase of blood supply; in other words, whether that also is amenable to irritant agents in the spinal fluid or whether it is considered purely an immune reaction.

Dr. J. J. McShane, Springfield: In a college in Kentucky a number of donors were obtained among the students of this college. A young man, who worked in our department during the summer season and went to school during the school year, had been bled a number of times during his college career. I am sure that if an effort was made especially among college students, we could obtain a number of donors.

Dr. Shaughnessy (in closing): Answering Dr. Hamill's questions, as far as they can be answered, I would say that from the literature and from our own experiments on monkeys, there is perhaps too much emphasis on the intraspinous injection. I would personally say that one injection given at the time that the lumbar puncture was made for diagnosis would be perhaps sufficient except in extreme cases, the rest of the serum to be administered by the intravenous or intramuscular route.

In Australia and Canada, where they perhaps do as much of this form of therapy as anywhere else, they make it a point to send out workers with all of the apparatus necessary for making a bedside diagnosis from the lumbar puncture. Then, while the needle is still in place, the first amount of serum is injected; none other than that. From an experimental standpoint, I think we can say that the intraspinous injection is somewhat superior to the other routes, but not enough, I think, to compensate for the irritation from repeated injections.

Dr. Hamill: Is it very irritant?

Dr. Shaughnessy: It is very likely to be. Of course, all injections of serum are, but of course there is a likelihood through pressure, which is one of the causes of paralysis, to produce still more paralysis where there is already an edema present in the nervous tissue as there is in this disease.

From the other standpoint, whether the results of the treatment are due to the calling out of the lymphocytes or other cells or whether it is a true immune phenomenon, I think the experimental results which are shown with normal monkey serum, which contains no antibodies as far as we can tell, and has no value in the treatment of the disease in monkeys, would indicate that it is more than just irritation; that there is a true substance present that inactivates the virus.

I would like to commend Dr. Orvis' attitude on this matter, as he said he is trying to collect in his own community the amount of serum which he expects to need. We, as Dr. Orvis already mentioned; are trying to collect at the State Department of Health a sufficient supply of convalescent serum to take us through the summer. As Dr. Orvis has also stated, the fact that so large a percentage of the cases are in young children and that we are not in a position to urge the donation of blood personally, makes it difficult to reach donors. In many cases we have to begin with correspondence which, of course, is not as satisfactory. We are finding it quite difficult to reach the number of persons that we could take care of. So far we have on hand just about a quart of convalescent serum, perhaps sufficient to treat somewhere between twenty-five and fifty cases. We ought to have ten times that amount by the first of July to treat the anticipated number of cases and to allow some margin. If you can possibly reach any donors and persuade them to donate blood, we would be very glad.

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badly that we are willing to take it from persons who have an attack longer than ten years ago and then pool it with the serum from more recent cases. We are pooling about ten sera so that we expect to have a pretty good average of potency. Answering another question as to whether we have to type this blood of the patient, I say no, but that it is tested in other ways. The Wassermann test is made, as Dr. Orvis mentioned, and, of course, sterility tests. Apparently, typing is not necessary.

Dr. W. A. Smith, Benton: Through what channel or avenue will this be used in the actual treatment?

Dr. Shaughnessy: How will it be possible to obtain it?

Dr. Smith: Yes.

Dr. Shaughnessy: From the State Department of Health, for persons outside of the Chicago area. We have turned over the work of collection and distribution in the Chicago area to the Samuel Deutsch Convalescent Serum Center at Michael Reese Hospital, which is an endowed institution. They are much better prepared financially and have the organization to do this work, so that it is possible for them to reach the cases and get the serum. This is furnished free of charge.

Dr. Howard A. Orvis, Winnetka: A point comes up that strikes me as being quite important, that is transfusion in cases of poliomyelitis. Take the virulent case that comes on suddenly. If we are going to prevent paralysis the treatment must be immediate and heroic. In such cases the only hope might be a transfusion from a donor of proven potency. The proof of potency in one or more who would act as donors would be of wonderful assistance in the emergency.

Another factor about which there has been some argument in the Chicago area is the matter of paying for serum. At Michael Reese Hospital they are, I think, paying $5.00 per 100 cc. We have been willing to pay in times of emergency $25.00 for this amount. I think we can persuade many young fellows of high school or college age to donate serum at $5.00 per 100 cc.

I am going to try to enthuse some high school students to be donors. They are husky live fellows who I believe will come across. This will be for normal adult serum.

The donors for convalescent serum have to be appealed to individually from the standpoint of human service to sufferers from poliomyelitis.

It seems necessary that a uniform price be offered to all donors.

Dr. Shaughnessy: We are paying for blood from the donors at the rate of ten dollars for each 100 cc. and are also paying the expenses of the individuals in coming to the place where they are bled. That may serve as an inducement in getting them to come in.

Dr. Ailes: You want convalescent blood.

Dr. Shaughnessy: Yes. But we are planning to get normal serum, too, because we think we are going to need it.

CASE REPORT OF AN INTRAHEPATIC GALL-BLADDER IN AN ADULT WITH A REVIEW OF THE LITERATURE

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A complete intrahepatic location of the gall-bladder is an extremely rare occurrence in view of the scarcity of the reported cases. Because of the experience we had with our case, we can readily conceive of the possibility of confusing a complete intrahepatic gall-bladder with an absence of the same organ, of which there are relatively quite a number of reports in the literature. It seems plausible to us that some of the cases reported as absence of the gall-bladder may, perhaps, have been instances of complete intrahepatic location of the gall-bladder. Attention directed to the possibility of confusing the two abnormalities, however rare they may be, may prove profitable, since surgery of the gall-bladder is practiced so widely, and a clinical diagnosis prior to operation so far has not been recorded.

Deve, in 1903, was the first to employ the term intrahepatic gall-bladder[1] as far as we could ascertain from the literature. He studied one hundred and thirty livers in infants and he found eleven instances to justify in his opinion this term. Of these, three were typical and eight the fundus alone was more or less embedded.[2] The most marked case he noted was buried in the liver substance for two-thirds of its extent, and on this ground he defended the title intrahepatic gall-bladder.[1]

Walton, in 1912, considered the writings of Deve, and Schachner, in 1916, defined an intrahepatic gall-bladder as being in part or wholly embedded in the liver substance.

We feel that in order to avoid confusion this term should be used only to describe and report cases of complete submersion of the gall-bladder in liver substance. Therefore, gall-bladders which are partially embedded, or rudimentary in nature, do not in a strict sense belong to this title.

In 1905, F. Lemon of Australia described a case of intrahepatic location of the gall-bladder with two tones, but he does not give the age or sex of the patient. His description consists

essentially of finding a "projecting eminence on posterior surface of the liver which appeared quite translucent. As no gall-bladder could be discovered, an incision was made on posterior surface of swelling when bile gushed out, and on further exploration two large gall-stones were secured."

Kehr, in 1913, stated that he has seen four cases of intrahepatic gall-bladder, and gives a complete history and operative findings of three cases. The experience he had with his cases is interesting and instructive. Therefore, we will give in short the history and operative findings of the three cases.

First case was a white female, 38 years of age, with symptoms of cholelithiasis of six years' duration. On operation, he did not find a gall-bladder, and he closed her up. Attacks of colic recurred, and patient had to resort to morphine frequently. Two years later he reoperated her and this time he made an incision into the liver and found a gall-bladder and two stones. Patient made an uneventful recovery.

Second case was a white female, 36 years of age, who came to operation with a preoperative diagnosis of cholelithiasis. On operation, no gall-bladder was found. He incised liver and found gall-bladder and two stones. The cut into the liver was accompanied by profuse bleeding requiring packing. The postoperative course was stormy and patient died twelve days after operation of a diffuse cholangitis and peritonitis. Third case was a physician from Constantinople, 42 years of age, with a clinical diagnosis of cholelithiasis. No gall-bladder was found. Incision into the liver was made and gall-bladder found filled with purulent material. Gall-bladder had perforated into liver substance. One large stone was removed. The septic postoperative course and a positive widal led to a diagnosis of typhoid infection of gall-bladder. Patient recovered.

For details the reader is referred to the original article by Kehr.

It is important to note that these are the first three cases on record with a complete history including age and sex of intrahepatic gall-bladder in adults as far as we are able to ascertain from a careful search of the literature. It is also of value to note that these cases occurred in a relatively short period, between 1908 and 1912, by one surgeon. This fact inclines us to the opinion that this abnormality occurs relatively more often than the scant literature on this subject would lead us to believe.

Case No. 14631. A white female, aged 27, who took sick in November, 1925, with attacks of pain in right upper quadrant of a pressing nature which was accompanied by nausea. She had a few vomiting spells. Between attacks she felt fairly well, with the exception of being badly constipated. These attacks were intermittent up to January 18, 1926, when she experienced a sudden attack of severe pain in the right upper quadrant, knife-like in nature, and radiating to right scapular region. She was nauseated and vomited frequently. On January 20, 1926, she entered the Frances E. Willard Hospital. Physical examination revealed a white adult female somewhat undernourished with acute abdominal pains. She was not jaundiced. Her temperature was 101.2, her pulse was 100, her respiration was 16, and her systolic blood-pressure was 110, and diastolic pressure 70. Blood examination revealed leucocytosis 17,500 red cells 4,700,000 and hemoglobin 70%, and urine had a heavy trace of acetone, but otherwise negative. Rest was essentially negative. January 21, 1926, she came for operation with a clinical diagnosis of cholelithiasis. The Mayo incision was made and no gall-bladder could be found. After searching for other pathology in abdomen to account for symptoms and not finding any, we resigned ourselves at first to a possible absence of the gall-bladder and a mistake in diagnosis. Were it not for the round edge of the liver, which attracted our attention, we would have closed her up. The surfaces of liver anteriorly and posteriorly were smooth. We decided to take a piece of liver for microscopic study. Then we had our surprise—thick, dark-yellow viscid bile gushed out, of considerable amount and apparently under tension. After clearing away the bile, a gall-bladder spoon was inserted and two large stones, which were ovoid in shape, were removed. The site was normal for the gall-bladder. The distance between the surface of the liver and the gall-bladder was about 3-4 cm. No cystic duct was seen outside of the liver. A drain was inserted and abdomen closed in the usual manner. Drainage was rather profuse for a while, but drain was removed on the tenth postoperative day. Patient left hospital on the fifteenth day and reports that she is doing well.

To our knowledge, this is the first case of complete intrahepatic gall-bladder in an adult with stones to be reported in this country.

Comment: To explain this peculiar disposition of the gall-bladder is quite difficult, unless we think of it as a persisting fetal or atavistic condition, or some error in development. Deve believed that in the process of union of the lobes of liver, the gall-bladder becomes surrounded

by liver tissue. Thus, the two primitive lobules of left-lobes are united to form one, and the quadrate lobe unites with the right lobe. He maintained that the gall-bladder is only intrahepatic in infancy, but later in life the liver tissue atrophies and gall-bladder becomes exposed. That an intrahepatic gall-bladder occurs only in infancy is no longer tenable in view of the cases reported by Kerh, and our own case.

Coughlin writes that the gall-bladder is at an early period of development buried in substance of the right lobe of liver.

Embryologically, the gall-bladder is constricted off from the ductus choledochus, and the connecting stalk becomes the cystic duct, and its development runs parallel with the development of the gastro-intestinal tract and rest of biliary passages.

The possible lesson to be derived from the above cases is this. When a patient has clinically symptoms of cholelithiasis, and on operation no gall-bladder is found, one should examine the liver carefully, perhaps needle it for stones before one makes a diagnosis of absence of the gall-bladder.

Summary and Conclusion:

1. Complete intrahepatic location of the gall-bladder is extremely rare in adults. When it does occur, it is usually associated with stones. To our knowledge the cases recorded which can be grouped under this heading are as follows:

Four cases by Kehr, with complete histories and operative findings in three cases.

Eleven cases in infants by Deve, of which three are said to be typical and in eight the fundus alone was more or less embedded, Strictly speaking it is questionable whether these cases belong to the heading of intrahepatic gall-bladder.

One case by Lemon, but he did not give age or sex of patient.

Our case in a female adult with stones. This makes a total of seventeen cases with histories and operative findings of five cases.

2. The idea that intrahepatic gall-bladder occurs only in infants as Deve believed, is no longer tenable.

3. Attention is directed to the possibility of confusing an intrahepatic gall-bladder with the absence of same organ. Such an experience is recorded by Kehr.

4. As an aid to the diagnosis of intrahepatic gall-bladder in case of suspected absence, needling the liver between right and left lobe may be advisable.

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FACILITIES FOR TREATMENT OF MENTAL DISEASE AND COST OF SAME*

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Consideration of this subject must be limited to the treatment of mental patients in some form of an institution; otherwise facilities are limited and the cost too indefinite to be considered.

Institutional treatment may be carried out in one of four ways.

1. In a general hospital.
2. In a sanitarium.
3. In a psychopathic hospital — a teaching and research institution associated with a medical school.
4. In a state hospital.

General hospital care is unsatisfactory because very few pavilions for mental patients are provided—in fact, there are none in connection with the general hospitals of Chicago, to the writer's best knowledge. Mental patients are quite unwelcome in a general hospital; their care involves a single room and almost always at least one nurse, often two. The cost to the patients' relatives, including the attending physician's charges and those of his consultant, may easily run from thirty to thirty-five dollars a day. Later on it will become even more evident that without special arrangements for the care of mental patients, the general hospital cannot provide adequate treatment.

Sanitarium care may cost anywhere from

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twenty-three to three hundred dollars a week, but the type of treatment furnished varies so widely that it is difficult to say what the cost of adequate treatment in a private institution should be, remembering always that there must be a net profit of, perhaps, twenty to thirty-five per cent. to the owners.

Psychopathic hospitals in the United States are few in number—in all, less than the fingers upon two hands. Per capita costs run, as given to me in a few of these: $4.29 at Ann Arbor, with sixty in-patients and twelve hundred out-patients during the year; $5.50 at the University of Colorado Psychopathic hospital, with eight hundred admissions and nine hundred and fifty out-patients during the year. The Psychopathic hospital of the University of Iowa spends $6.50 a day upon its patients, the number of which is not stated. The Boston Psychopathic hospital averages (1929) $58.75 a week for in-patients (about 80) but examines 1,049 out-patients a year. Thus the average cost of care and treatment in institutions of this type based merely upon the number of in-patients, runs from $5.00 to $7.00 a day. Research, teaching and out-patient departments add so much to the financial load, that it is difficult to estimate the exact cost of maintaining a bed patient during the period of diagnosis and treatment. Those who require continued care and treatment naturally are not retained in teaching hospitals of this character.

Approaching finally the question of state hospital treatment, the figures become still more difficult to analyze, in view of the fact that the character of the treatment furnished in such hospitals varies, as in sanitaria, from poor to what may be considered adequate, if not ideal. These institutions are maintained at public expense and the burden upon the taxpayer must always be considered. No attempt has been made at this time to select representative institutions. Such comparison would be odious and very possibly unfair. Elgin State hospital in the year 1929-30 spent $228.59 upon the care and treatment of each patient. In 1930-31 the estimated cost will be $250.00 to $260.00. The Central hospital of Indiana, in its report for 1930, shows a per capita cost of $322.00. The Rochester State hospital, New York, a rather small institution, spent $419.00 per patient in 1929-30. In Massachusetts in 1928 the cost at the Boston State hospital and at Worcester was almost exactly a dollar a day.

These are the figures for various types of institutions for the treatment of mental patients. What ought these figures to represent in the way of medical care? Few in the general profession can appreciate all of the implications of the word *treatment* in mental cases. The elements of general hospital care are familiar quantities in so far as the physically sick are concerned, but to the diagnosis and treatment of what may be a physical ailment in a mental patient must be added a very considerable amount of clinical and laboratory, as well as social, investigation that is not usually a part of general hospital care. A brief inquiry into this phase of the problem may be of interest here.

In the first place, diagnosis implies far more than a mere physical evaluation of the mental patient's present status. It is necessary to know what sort of a person has reacted in an abnormal manner to various stresses and strains originating from within and without. As much as possible must be learned concerning heredity, birth and early development, intellectual and social adjustments, sexual history, injuries and diseases, work adjustments, toxic influences, previous attacks of mental trouble, the onset of the psychosis, etc. Dementia praecox, involutional melancholia, paranoid states, epileptiform phenomena, etc., require especial effort in collecting all the essential data.

The examiner must be prepared to supplement the ordinary procedures of general physical and neurological examination, with estimates of constitutional makeup, blood chemistry, colloidal blood states, basal metabolism and electro-cardiographic studies, encephalography, various tolerance and permeability tests, x-ray work, gastro-analyses, etc. For a comprehensive view of the data essential to an adequate estimate of a mental patient's status and the mental mechanisms involved, I would refer you to a manual gotten out by Dr. George H. Kirby, of the New York Psychiatric Institute—*"Guides for History Taking and Clinical Examination of Psychiatric Cases."* A half hour's study of this eighty-three page publication will go far to enlighten the non-specialist as to the vast amount of painstaking work involved in collecting data for a psychiatric diagnosis.

It would be superfluous here to consider at

length the mental examination, which may require anywhere from a half-hour in the case of a senile or paretic (exclusive of laboratory work) to days or weeks of laborious investigation in cases of so-called functional psychosis. Repeated interviews may be necessary before the case is prepared for presentation in staff conferences, after which frequent progress notes must be made and other workups as the case develops later on.

In order to proceed thus far with the case preliminary to treatment, it is essential that the patient be in charge of trained observers, psychiatric nurses and specially trained attendants, internes and resident physicians, and there must be ready access to a well staffed laboratory and to such surgical intervention as may be indicated. Pupil nurses' training schools must be maintained and a considerable amount of teaching carried on, not only in these schools, but in the clinical instruction of various visiting groups and of the community at large. These latter efforts, while not directly centered upon the treatment of the patient, all affect his welfare sooner or later. Out-patient departments should be maintained for the benefit of the surrounding communities, so that mental patients, or prospective psychotics ouside, may receive attention and early treatment in the hospital assured if adjustment cannot be accomplished otherwise.

The personnel involved in any adequate attempt to diagnose and treat new admissions and to carry on the care and treatment of older cases is considerable. In a state hospital, where the patient remains until such time as he is paroled, discharged, or dies, an evaluation of the cost of treatment of recent admissions is difficult, but without doubt it would run, so far as medical and nursing care is concerned, to twice the expense of continued care and treatment of patients after they have been in the institution for a number of months.

Possibly it may be permitted here to refer to the state hospital with which the writer is connected. For an estimated average population of 3,800, the coming biennium provides a little over half a million dollars a year in salaries and wages and for various other expenses almost another half million, or in all about $266.00 to spend upon each patient per year. This is not a large figure, but times are hard and taxes are high; also, foodstuffs and other commodities are much cheaper than they have been for a long time.

Personnel, after all, is the main factor in the treatment of mental cases and naturally the most expensive single item in the maintenance of mental hospitals, equal in amount to the cost of all other items combined. To our present salary list, if tax burdens were not to be considered, might very well be added several more physicians, a pathologist, laboratory technicians (if the laboratory of the State Psychopathic Institute were not located at this hospital) a number of trained occupational therapists, two physical directors, and many more attendants. The salaries of such an additional group would amount in all to at least $100,000.00 a year. If we divide this additional cost of treatment by our average number of patients, we find this per capita increase per year to be about $26.00, and adding this thirty to the already established per capita of $266.00, we arrive at an estimate of about $300.00 a year. To this also might be added an interest charge of four per cent. on the investment of $2,500.00 a bed (very moderate replacement cost) thus bringing the total expense up to $400.00 a year.

Although we feel that we are doing well at the present time, the above additional personnel would assure each individual patient coming in to a state hospital of this size quite adequate treatment along the lines above described for the first three months of his or her hospital life. After this time, should the patient not improve enough to be dismissed, treatment would inevitably tend to become more and more group-like in character, but there would still be abundant resources, including personnel and equipment, for individualization in such cases as might seem especially to require this. Of course, it goes without saying that when we speak of personnel we have in mind high types of medical officers, social workers, nurses, occupational therapists, and laboratory assistants—people who receive appointment upon their merits and are continued in their positions only so long as they do good work.

In 1928 the per capita cost of the Illinois state hospitals varied from $235.00 to $300.00 for an average population of 21,869 and to this cost of maintenance must be added the cost of permanent improvements, involving many millions of dollars at Elgin, Lincoln State School and Col-

ony, etc., and especially in the construction of an entirely new institution at Manteno, which will be developed into a hospital for some 5,000 patients. Proper housing reflects itself inevitably upon the physical and mental status of state hospital patients. In the past two years Illinois has done an especially fine piece of work at Elgin by the construction of new cottages (principally for the continuous care and treatment groups) providing 1,100 beds to relieve the crowding present at the beginning of this period.

At Elgin the budget for the coming biennium contemplates a new diagnostic building, with a capacity of 200 patients, at an approximate cost of a quarter of a million. This building will necessarily be a simple construction, but will furnish everything necessary for the proper care, diagnosis and temporary treatment of newly admitted cases, which are coming in at the rate of 150 a month at the present time. One of the older buildings has been remodeled especially for research and special treatment purposes. The laboratory of the Psychopathic Institute provides every facility for laboratory examination and together with the hospital, the Institute, under the direction of the Alienist, Dr. Sidney D. Wilgus, is carrying on what may prove to be important pieces of research work. And yet it should be added that this Institute laboratory furnishes little more than the facilities requisite for proper diagnosis and treatment in every state hospital.

CONCLUSIONS

Home care for acute mental patients is inadequate and expensive.

Sanitarium care ranges from poor in character to what may be considered adequate, but is within the means of comparatively few people nowadays for any considerable period of time.

Special research and teaching hospitals are few in number and the cost of maintenance, because of the teaching done and the large number of out-patients dealt with, cannot be compared with state hospital costs.

State hospitals are the mainstay of all mental treatment programs. These hospitals should be maintained upon the same basis as our public schools—as public welfare projects, open to all without any stigma of "charity" attached.

Adequate state hospital treatment involves proper physical equipment at a minimum cost of $2,500.00 to $3,000.00 a bed.

The diagnosis of a mental case is often a far more exacting procedure than that involved in physical disease alone.

Personnel is the most important and most expensive single item in state hospital maintenance, involving at least one physician for every 175 patients, a competent laboratory staff, a complete surgical and medical hospital setup, registered nurses upon all sick and acute mental wards, a corps of hydrotherapists sufficient for twenty-four hour service, a training school, social service and occupational therapy departments, and facilities for out-patient and educational work in the surrounding community.

The State of Illinois at present is giving its insane good care and is looking forward to a program of treatment that can be considered adequate. Millions have been spent during the past two years in the relief of crowded conditions, which expenditure will inevitably result in the physical and mental improvement of the patients. More physicians and nurses are constantly being added to the personnel at the various institutions and a definite attempt is being made to give patients individual treatment in place of group care.

DIAGNOSIS — CLINICAL DEMONSTRATION OF CLASSES OF MENTAL DISEASES*

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We psychiatrists are all accused of using fancy names. I presume the imputation is that we use the fancy names to disguise our ignorance. I think that is a perfectly correct statement of affairs. I am going to try and keep away from fancy terminology and, so I suppose I am going to demonstrate my ignorance. The diagnosis of committability is, perhaps, what you gentlemen are most interested in. This is a great social problem, the question of committability. The practice, for instance, in the psychopathic hospital in Chicago in the staff meetings is to discuss at great length the case, all the mental symptoms as far as they can be discussed, and after it is all discussed from that point of view, finally the question is taken up very shortly as to whether the patient is committable or not.

*Read before Section on Public Health & Hygiene, Illinois State Medical Society, May 6, 1931, at East St. Louis.

And I should say that somewhere between one-fourth and one-third of the cases discussed as mental cases, are not considered committable; that the committability of a case is, in other words, a very different thing from merely the mental disease side. After all there is a problem of conflict in all social life. All social life is a matter of conflict. All life is primarily and fundamentally instinctual. There is some element in the human drive that leads to the creation of idealism and out of that creation of idealism comes what we call social behavior. Social behavior is something we have to learn and we all have to learn it by the route of being wrong in our instinctual efforts and being corrected and trimmed to fit the social pattern of the community in which we live. So the essential thing is that there is this conflict with every single one of us. Every one of us wants to be more selfish than we dare to be. I dare say most of us would confess at some time or other that every one of us would like to be more sensuous than we dare be. And after all these two general things cover practically the whole of life, selfishness and sensuousness. Every single individual, I believe, would gladly be more selfish and more sensuous than they would dare to be or, in other words, we have that drive to be these things but the social pattern of the community in which we live makes it impossible for us to be those two things. In other words, if there is this social or mental conflict or so-called disease present with everybody, then it is merely a question of whether the rest of us can get along with any particular individual, as to whether we are going to let him stay in the community or have to put him away. The committability comes down to the question of whether there is anybody to take care of the individual outside of an institution or whether he is to be cared for inside of an institution; in other words, if he will not adjust himself sufficiently to the demands and rights of other people, there has to be a place to take care of him. There are two places; one is the insane hospital and the other is the jail. So, the committability becomes entirely a question of whether there is anybody to take care of the individual outside or whether the individual can adjust himself enough to be taken care of outside. For instance, a young man of 21, who was in the divinity school at the University of Chicago, was brought in to me by his uncle, who told me that the young man had been acting and talking as though he believed he was Jesus Christ, and the young man easily confessed that to me; he showed it quite plainly. Being in a hurry that day, I said to the uncle, "Well, you better take this fellow right over to the psychopathic hospital." He went to the psychopathic hospital. I lost track of him. A year later he came into my office with his eyes blazing. I didn't know whether he was going to shoot me or not. He said, "You sent me to the psychopathic hospital a year ago. Seven doctors examined me and they turned me out." And then a crafty little look came into his eyes and he said, "I didn't tell them anything about that Jesus Christ stuff." In other words, on that trip across the city or after getting in the psychopathic hospital he found out that things weren't as rosy as he hoped they might be, or something of that sort, and he had learned to keep still about the fact that he believed that he was Jesus Christ and could believe what he wished. And so, as he came in the second time, he said, "You and I know that I have got sense enough not to talk about being Jesus Christ when the officers of the law are around." And that is what it amounts to. He was still socially adjustable to that degree. He had not as yet given up entirely to his belief that he was Jesus Christ.

Now, the first man here today was 23 years of age when he was admitted to the hospital in June of 1929. He was born a normal child which, in view of the pictures we saw here today, especially of these birth injuries, brings up this question in my mind, something that I feel that the general medical public is the only source from which we are ever going to get the question settled; viz.: that there is a certain percentage who have blood in the spinal fluid at birth. I believe that percentage, from all tests that have been made and all statistics that we have, is great enough to, account for all insanity, epilepsy, feeble-mindedness and perhaps behavior problems. But this man was said to have been born a normal child. Of course, that is a hard thing to be sure of unless a spinal tapping is made on all infants. Blood may be

spread over the cortex of this rapidly developing, tremendously complex mechanism with which we meet the problems of life, and a little of it may account for a great many of these cases that turn out to be individuals who can't meet the demands that society makes on them.

This boy had very nice manners at first and then he had a change of attitude, and took pleasure in insulting any member of his family. I think as a matter of fact, if we could understand every case of mental disease we would understand primarily that that person was being what he wished to be, was trying to behave as if his wants were facts. I am perfectly sure there are grandiose ideas going on in this brain with complete insensitiveness to the world about him, pictured in his behavior. One is reminded of the attitude of Buddha by this attitude of catatonia, of complete self-centeredness.

There was a time when this boy, Arnold, resembled a catatonic in a way; that is, he came back to the hospital at one time after a parole and seemed to be confused and remained in bed quietly and wouldn't talk and seemed to be somewhat depressed but this condition didn't last long. In a few hours after his people had gone away, he became jovial. To avoid technicalities, we believe that parents and other members of the family, especially the elders, are the stuff out of which we develop what we call a conscience or our idealism. In the presence of his people he was moody, depressed and retarded. In other words, as long as his conscience was active, this was his state of mind but as soon as his conscience left him, viz.: his family went away, he felt better. Now that brings up a very important point in the whole business of committability. How well does the patient get along in the family and it is possible that he gets along outside of the family better than he does in the family and can be taken care of outside of an institution and not inside of the family circle. That is often the case because the family represents the conscience. It is as if we were all small children and were still afraid of father and mother. As soon as this mental disease stuff begins to get the upper hand, then that's what you see. So, committability, depends on the adjustability of the individual in the community, living primarily in the family. Very often they can not live in the family. I mean, we see many cases of a mental outbreak shortly after marriage or shortly after an engagement, where this close association with another individual is envisaged.

Often a person can live outside of an institution and not in the family. In other words, they don't have to be committed if there could be found some kind of foster home for them. When the degree of divergence or inadaptability is sufficiently great so that neither of those two conditions can be met, neither the life in the family nor the life outside, then that patient is committable. Now, how would you determine that? Well, I think that is where the catch comes in. I suppose I have to admit that is where the catch comes in, because it has been my experience, and I think it is very common experience, that for the first few years of contact with mental disease we don't know whether they are telling the truth or not because they believe what they are telling, and it is only with experience that one begins to get a slant that the patient is hallucinated or is telling you their delusions because they can so easily make up their delusionary content and rationalize it to such a degree that they can fool almost anybody.

Now, of course, the development of psychiatric social work is of great assistance and is gradually growing in importance in aiding the handling of this situation.

This patient (indicating) of course is perfectly obvious. It seems to be dementia praecox of the catatonic type. He won't answer. His hands are wet. You can see the color of them. One can see that all these cases must be judged both from the mental and physical side. However, I feel that the physical side of all these problems is especially important from the sympathetic nervous system standpoint. In other words, the reflexes and sensationss, and adroitness or ataxia or lack of ataxia, or things of that kind, are really unimportant, but signs like these of the involvement of the sympathetic nervous system—those are the things that are to be seen time after time in the dementia praecox situation; I would say, rather, the evolutional insanity, viz.; the insane who just gradually go crazy, who do not meet their adjustments, and I think that these physical signs will always be looked upon as signs of fear.

SHALL MENTAL DISEASE COME UNDER PUBLIC HEALTH REGULATIONS*

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Authorities on the subject of psychiatry have presented evidence in this symposium presented to the Illinois State Medical Society to the effect that mental disease, with all of its devious ramifications, is on the increase to an alarming degree, not only in the State of Illinois, but throughout the United States. The fact that our insane asylums and penitentiaries are filled to overflowing, that there is a lack of adjustment to environment on the part of an increasing percentage of the population, is sufficient evidence that mental disease is well placed in the realm of public health problems.

The trend of public health work is ever changing, depending entirely upon the problems which arise for solution. From matters pertaining entirely to sanitation it has progressed to include successively control over water supplies, milk supplies, and the routine control of contagious disease to its present effort to add to the sum total of human happiness and health by delving into the health of the individual. Outstanding in the more recent efforts is that of the prevention and the correction of defects among school children, which is being carried on the crest of a nation-wide move following the White House Conference on Child Welfare called by President Hoover. This trend in recognizing present day problems must, because of the demands of society to be relieved of unbearable burdens, eventually include the prevention and control of mental disease.

Mental disease is responsible to a great extent for vagrancy and habitual criminality, resulting in the grievous crime condition which exists throughout the United States. Recognizing mental disease as a public health problem, it is necessary that an official agency be designated whose duty it will be to sift out and treat the individuals who come under the category of "mentally diseased with criminal tendencies." The statutes of the State of Illinois do not provide for nor designate any official agency to find or sift out mentally diseased individuals who commit or may commit anti-social acts. The statutes do provide that any reputable citizen may file complaint or cause to be apprehended an individual who in his opinion is suffering from mental disease, thus establishing a condition which may be described as a matter which is everybody's business, but resulting in being no one's business. There are many instances which could be recited, but which are not within the realm of this article which would demonstrate the fact that mentally diseased individuals who are known to be a danger to the community are at large because of fear or reticence on the part of citizens. The lack of concentrated effort on the part of an official agency has resulted in countless numbers of crimes against nature and has endangered the very foundation of law and order in many of our communities, especially the larger cities.

Toward the solution of the ever increasing problem of sifting out and dealing with the mentally diseased with criminal tendencies the following resolution was presented by the writer before the council of the Chicago Medical Society and was endorsed unanimously by that body:

WHEREAS, mental disease is recognized as a public health problem, and

WHEREAS, a grievous crime condition exists in the United States with a concentration in large cities of mendicants, vagrants and habitual criminals among whom are many mentally diseased, and

WHEREAS, the statutes of the State of Illinois do not provide for nor designate any official agency to find or sift our mentally diseased individuals who commit or may commit anti-social acts, and

WHEREAS, the Department of Health of the City of Chicago derives its power to deal with disease from Article 5, Section 1, Paragraph 78, of the Cities and Villages Act, which expressly authorizes the city council to do all acts, make all regulations necessary or expedient for the promotion of health or the suppression of disease, and

WHEREAS, under this provision express authority is granted the municipality to pass all ordinances or requirements tending to promote the public health, morals, security, comfort and welfare of the community, and the Supreme Court of the United States has so held;

*Read before the Section on Public Health and Hygiene of the Illinois State Medical Society, May 6, 1931, East St. Louis.

Therefore, be it resolved that the Department of Health of the City of Chicago be empowered by the passage of the proper ordinance and be given the necessary personnel to examine mentally persons charged with crime or delinquency before trial; the Department of Health to serve in an advisory capacity to the judge and to submit to the judge a written report of the findings for his consideration in the final disposition of the case.

The subject matter of this resolution is unique in that it seeks to apply the powers granted under the Cities and Villages Act of the State of Illinois to deal with mental disease in the same manner under which departments of health have successfully dealt with communicable disease and have promoted the public health, morals, security, comfort, and welfare of the community wherever necessary. The empowering of a department of health to examine mentally persons charged with crime or delinquency before trial and to serve in an advisory capacity to the judge concerning the individual's mental status does not in any way interfere with the present statutory management of the insane, but does thereby give to the judge information which will assist him in dealing justly with every case which comes before him. This consideration with particular reference to mental diseases at the present time is given only to selected cases or a privileged few.

Through this approach the community will be given information which it needs concerning the relationship of mental disease to crime and better methods of dealing therewith. It will be found in Illinois, as in other states, that a wholesome percentage of individuals who are mentally diseased and have criminal tendencies and who are irresponsible will be found able, and in many cases willing, to support themselves under proper supervision. Likewise it will be found that they should not be incarcerated in asylums or penitentiaries, supported by taxes. In recognizing mental disease as a public health problem the gate is opened to the replacement of punishment with scientific study and care and possible rehabilitation of a definite group.

DISCUSSION

Dr. W. A. Evans, Chicago: I see that I am to talk on the subject of Prevention of Mental Disease. Dr. Kegel has proposed that the Department of Health be empowered under the law to gain information about cases of developing mental disease, to examine them, and to initiate procedures for the proper control and care of people who are thus diseased. This is based upon three premises, the first of which is that mental disease is a disease differing in no essential (as viewed from the standpoint of preventive medicine) from physical disease. If it is a worthwhile problem, if something can be done about it, then it is worth doing something about. I take it that we need not argue that it is a worthwhile problem. The State is now overwhelmed with the necessity for taking care of a small part of those who are mentally diseased. The cost of treatment of developed diseases in State institutions, maintained at State expense, is far greater than any other to which our government is being put at the present time, unless it be the matter of education. I think it is illustrative of what would be the condition of affairs with physical disease were its care undertaken in the same way as a State function at State expense. The care of those physically sick would entail a burden upon society that society, in an organized way, is incapable of bearing as things now stand. Of course, conditions would have been very much worse had it not been that a good long time ago the relation of prevention to developed physical disease was discovered and recognized, and we undertook in an organized and systematic way to prevent the development of certain types of physical disease. And that has greatly reduced the incidence.

We haven't done the same thing with mental disease. The burden has been permitted to continue, society taking care of nothing except the end product, which is multiplying and increasing constantly until we have now got to the point where the expense and other burdens connected with it is threatening to break down the entire social fabric.

There should be some way in which prevention could be applied to preventable diseases of the mind, as it has been applied with such success to preventable diseases of the body, and if no such way can be discovered, or if no such methods are presently applied, I can't see anything other than, in the course of time, it is going to wreck our social structure. Even if we don't know what to do, we better begin doing something and, in that way, discover to ourselves the immensity of the problem and eventually to find out for ourselves the methods of doing the job which now escapes us.

When preventive medicine was applied to physical disease, we knew comparatively little about what we should do. The very fact that we knew so little is what stirred us to the discovery of things to do. Those that we were uncertain or wrong about (and positive that we were right), as the result of trial and error, have been so perfected as that they are now valuable procedures. The point to all of that is this: If we postpone the inauguration of doing anything until we know full well what to do, until there is no further possibility of perfecting the process, we don't get very far. Everything that has ever been undertaken, which has eventually succeeded, so as to meet the broadest expectations of those engaged in it, has been begun as an endeavor the success of which could not be guaran-

teed. At the beginning the end could not be foreseen and as the result of the experience the thing has worked out. It would seem to me to be quite excusable and in fact quite proper that we should not longer delay preventive work against mental disease because we can't see through to the end or perhaps because we can't see around the next corner. If that is our attitude towards it, we will never begin because there never will be a day when, standing from without, we can see through to the end.

Now, what are we going to do about it? Dr. Kegel has proposed to the Chicago Medical Society a very simple little procedure, and I believe that it has been approved by that society. It is merely a first step. He calls our attention to the fact that the machinery for originating investigation of differentiating mental diseases is very incomplete. It perhaps was necessary, way back yonder in the beginning, to put these safeguards around it. I take it that we all call to mind cases, some of which are historical and others which are within the personal knowledge of those who are here, in which unfair advantage has been taken of people and perhaps they have been improperly confined under a charge of insanity or under legal proof. In order to prevent that from happening, we threw around the procedures so many safeguards that it doesn't work satisfactorily or at all logically. That is true of a great many of our social procedures. Of course, they came out of the days when society was rebelling against the centralized powers of Great Britain and the barons, dukes and lords of that country. Thus came the Magna Charta and other instruments that grew out of it, which provided for our jury system and a half dozen of our procedures, including those that presume a man is innocent until overwhelming proof of his guilt has been adduced. I might cite a good many illustrations of the fact that, serving to protect the individual against such invasions of his rights, we have built up an elaborate machinery for protection that placed the decent members of society enormously at a disadvantage as against crooks and other enemies of society of various sorts and kinds. This elaborate machinery to protect people who are a little "queer," or people who have been confined for one reason or another, has brought us legal machinery that is inadequate and which doesn't at all fit the case. One of the best illustrations that we ever had around Chicago was a lawyer whom no one but the very aged and senile in this audience will remember, and, let me say, whom I remember very well. He was Frank H. Collier, who had what was then termed a "circular insanity." When he was very offensive he irritated a great many people, and some of those who were irritated would prefer charges against him. He would be arrested and his case would come up for trial during a period when he was inoffensive, harmless and meek, or else during a period in which he was quite normal mentally. As a general proposition he was declared sane and freed of the charge. He made more than one member of our profession very uncomfortable because he got to be a professional advocate in this matter and more than a match for the doctors who swore that he was insane. The net result of it all was that though he was just as crazy as he was when he was offensive, because he was so inoffensive and harmless when on trial the jury generally cleared him. Over the course of years he had been in a good many different courts and had been on trial many times; he was crazy in some courts and sane in other courts. The point that I am trying to make is that the test was his offensiveness to other people and not at all a condition that was peculiar or that ran straight to the heart of the thing, the machinery operating on the basis of the reaction of certain other individuals. Now, there is not any logic in that and certainly there is not any science.

Dr. Kegel proposes that we simplify that machinery and make it somebody's duty to investigate and stimulate it by considerations other than those of the rights of certain groups of people and, of course, so far as that goes, it is very much better than the present machinery. I think he appeared before the Chicago Medical Society with this proposition and he has their endorsement. That's just the beginning. He was there doing nothing more than providing a better method than the present one of selecting out of the community those who were mentally disintegrated; or he was devising machinery for selecting people who were just on the threshhold of disintegration. That wouldn't accomplish a whole lot unless he went further. But history teaches us that such a beginning would have been nothing more than a beginning and that it would have to go further. In fact, it quite speedily resulted in the establishment in the Department of Health of a bureau of mental diseases, having something to do with the prevention of mental disintegration as well as the more scientific care of those who were mentally diseased. Of course, that is just at the beginning of prevention. In fact, it isn't much more than a gesture of prevention. Inevitably it would have led to other preventive medicine procedures just as naturally as such other procedures have followed in the wake of beginnings in other fields of preventive medicine. Naturally, there are many things that occur to you. In the first place, there are the toxic psychoses of which the cause is known and, therefore—theoretically at least—the prevention should be easy; various forms of alcoholic psychosis, of opiates and other drugs, including veronal, and the drugs of the group. Now, they are extensively used, leading to a very considerable amount of harm, some part of the responsibility for which is with the medical profession and some part with the people. But the ultimate possibilities of the harm done by it are not being made apparent to the profession or to the people. And with respect to the sleep-producing remedies, there is no restriction upon the use or purchase of those remedies by anybody.

Then, of course, there comes that other great group of mental diseases that is very important, which follow in the way of syphilitic infections and that is half way in the Health Department now. We are finding a great deal of difficulty in getting support—community and other support—for the treatment of venereal diseases. If we could develop hand in hand with that, and with their responsibility for so much of mental diseases, so

costly to the community, it would be easier to carry out a venereal disease program than it is in the absence of that effect, and, in the absence of the integration of that effect, with the other harmful effects of venereal diseases.

There are, of course, the great personality diseases—the emotional diseases—so many of which ultimately result in insanity. They do very much more harm to society before they result in insanity than they do after. This is a great group of many millions of mentally sick people who are not now being cared for in that particular relation by any arm of society or even, for that matter, by the medical profession. I mean in relation to the ultimate mental harm that comes out of the failure to train those people on the basis of their personality diseases. They graduate from personality diseases into insanity. Types of personality diseases that result in insanity are recognized long years before the ultimate comes. These wise men who work in mental medicine know them for ten, fifteen, twenty-five, or thirty years before they finally get to treat them and know that in all probability getting them in their care eventually is inevitable. Now, that information is in hand and yet there is not any machinery of government for making practical use of it except in two or three places. That is, in two or three little types of activity, rather in two or three geographical places.

An then there is the interesting group of people who are idiots and feeble-minded—the arrest of mental development at various levels—for which something must be found and will be found. It seems that we might be on the road towards doing something for that group of people in the way of a cure of the condition after it has developed. If nothing else can be done, there is the great question of sterilization, to the end that they may not come into the world unless under conditions that have been demonstrated to be proper.

Now, if all of this is as important as what we have been saying would indicate, why is it that we have gone this far and done nothing about it? As a matter of fact, there is proof in what has been done that it is the right thing to do. The Chicago Health Department is not the only department that has tentatively organized a division of mental hygiene in the health department. The Westchester County Health Department, in New York State—perhaps one of the most carefully planned in advanced health departments that we have had in this country, functioning in one of the wealthiest counties in America, and starting out deliberately to plan their department of health well—has taken from the Sing Sing institution the medical director who was there for a great many years and put him in charge of the bureau of mental hygiene in the health department. This bureau has to do with the prevention of those mental diseases that eventuate in criminals, in insanity, and in other things. A good deal has been done in the same way in the State of Massachusetts. I am sure that I could cite to you a great many illustrations elsewhere of departments of health that are feeling around on this thing. The urge is there. They see the need. They see something must be done. They recognize how they can do a few things and then they have begun. The fact that they have started, I think, is additional proof of the need that something should be done in this matter. (Applause.)

Dr. F. J. Gerty, Chicago: Classification has been one of the chief objects of specialists in mental diseases until rather recent times. It is very unfortunate that this is so. It is difficult to classify, definitely, any such body of knowledge which is so little understood and which is so inexact as the subject of mental disease. I am not going to say much about the ordinary classifications, such as the ones found in the statistical manual for the classification of mental diseases. Instead, I shall use something much simpler. Practically all of the mental abnormalities can be placed in five elementary groups. The first of these groups is amentia, or feeble-mindedness. Here there is retardation or lack of development of mental processes from birth or childhood. We should recognize this condition early, for some of these patients can be trained to perform useful functions in life. Highly trained people do not care to do some of the work that many of these patients can do with credit to themselves and to the community. The second group that we should recognize is that of the psychoneuroses. I believe it will not pay to adhere too strictly to the old classification of hysteria, neurasthenia and psychasthenia. All of us, at times, undoubtedly show tendencies and symptoms which, when found in other people, we would say are evidences of psychoneurosis. Certainly, we who are here can understand, from the adjustments we have made in our own lives, that there is something in the training of the individual which accounts for many of these symptoms. There are certain contacts that the patient has made, certain difficulties that he has met, or certain failures to solve situations in the most comfortable manner, that result in the psychoneurotic manifestations. Dr. Hamill's paper touched on this subject this morning. It is very important that the general practitioner recognizes this particular group as soon as possible. It is better to treat the patient for what is wrong with him, rather than for surgical and medical conditions which probably have little to do with his symptoms. We should not discourage the psychoneurotic from accepting, in a medical way, the treatment which he sometimes gets in a blind and unreasoning way from other practitioners, such as Christian Scientists, chiropractors and osteopaths. A third general group is that of the dementias. Here there is a loss of previously acquired intellect. On first thought, this group seems to be a rather hopeless one, because there is a deteriorative, destructive process at work. Yet general paresis is a condition classified with the dementias, a deteriorative, destructive process of the central nervous system, accompanied by mental symptoms, and in connection with that condition we have experienced one of the most brilliant successes in therapeutics in modern times. I refer, of course, to fever treatment. Since such good results have been accomplished in one type of dementia, it is possible that other therapy can be found which will arrest other deteriorative changes. Many cases of paresis are not recognized early. I need

hardly stress the importance of early recognition when we have an effective remedy at hand. The fourth group is that of the psychoses, those functional or qaulitative changes which result in abnoraml thinking, acting and feeling, but unaccompanied by any destructive organic processes. I do not intend to discuss the varieties of psychoses. It is important that we have a proper understanding of the outlook in acute psychoses as compared with mild chronic psychoses. Though the layman often considers the mild chronic phychosis to be the less serious, from the standpoint of recovery, the experienced psychiatrist knows that better results are more often secured in the very acute mental disturbances. It is true that the actions and the appearance of the patient in the severe and acute psychoses are not promising. Such patients often won't eat or sleep, they are very restless, sometimes violent, and are commonly subjected to much restraint and abuse. Patients showing decided symptoms of this sort should be placed under treatment early. It is more important to treat them than it is to classify them in the proper group, because the most striking sort of results can be secured in a large percentage of disturbances of this sort. The final group is that of constitutional psychopathic inferiority. Here moral and social defects are outstanding. The classification has become a sort of "catch-all" one, including such diverse condition as pathologic liars, tramps, criminals and, according to the views of some authorities, sex perverts and drug addicts. The sub-classifications in this group are probably not entirely rational. Recognition of social and moral defects which might later lead to classification under the diagnosis of constitutional psychopathic inferiority, is important. We should be on guard for such tendencies, even in the pre-school period. Training and disciplinary measures may have some effect on such patients. In these conditions, treatment is demanded for the good of society even more than for the good of the individual.

Dr. Harry R. Hoffman, Chicago: I apologize for chief Justice McGoorty's absence, who is detained by a special Grand Jury in Chicago. I have heard some terms mentioned today, crime and delinquency. What do we mean by crime? It is a difficult thing to define. Crime is only one type of behavior. It is oftentimes difficult to differentiate it from any other type of behavior; very difficult. I should say that we have only one natural crime and that is murder and that isn't always a crime. For instance, we declare war tomorrow and some one goes out and shoots somebody; a normal individual mentally, a sane individual, a sane act, and he may receive the Croix de Guerre. In some countries of the world larceny isn't a crime. So we should speak of social behavior. We have been talking today about criminals incarcerated in institutions. The bulk of criminals by far are outside of institutions. The ones that are incarcerated are those incompetent ones that can not hire attorneys. Their mental condition is so low, they are suffering from psychosis or what not, that they are caught and incarcerated.

For twenty years past I have been connected with the city House of Correction of Chicago where we have eighteen thousand antisocial individuals incarcerated in that institution in a year. I have been out there without a salary, using it for teaching purposes. We know this at the city House of Correction in Chicago, that of this eighteen thousand antisocial individuals in a year fifty-five per cent. have been in that institution one time or more; thirty per cent. have been at the city House of Correction twenty-five to seventy-five times. So you can easily see the large percentage of recidivists. Last October, struck with this idea of the large per cent. of recidivism, I called a meeting of the medical men, of the judges and chief justice of the criminal court and the municipal court at the city House of Correction, and we had seven hundred and fifty at the medical meeting, which is rather a large group. Crime is a very expensive proposition. It is estimated by the National Crime Commission that crime costs the government from eight to ten billion dollars a year. The State of Missouri, by their crime commission, last year, estimated that four million dollars is spent for crime. And Illinois isn't much better than Missouri, so we can figure that Illinois spends from four to five million dollars a year on crime. Next to education it is the most important and most expensive agency of the government. Following this meeting at the House of Correction, through the untiring efforts of Chief Justice McGoorty, the deans of law schools and various social workers, a plan was drawn up through the efforts of Dr. Gerty and Dr. H. Douglas Singer, of Chicago, and was presented to the Cook County Board of Commissioners for a clinic in the county jail. Up to this time, to my knowledge, there has never been any psychiatric advice to the jail in the true sense of the word. A jail is supposed to be a place of confinement for individuals awaiting trial and not sentenced. They have all their rights in the Cook county jail. We have about fifteen thousand prisoners a year. About ten per cent. are there on sentence. Some for major crimes, like failure to pay alimony; some on government charges, liquor charges. But ninety per cent. of the individuals in the Cook county jail are there awaiting trial. They have all their rights. You can not demand an examination of those individuals. As I say, through the efforts of Judge McGoorty and others, the county board arranged a set-up of a clinic and for want of a better name we called it the behavior clinic of the Criminal Court of Cook County, an advisory behavior clinic to the judges of the Criminal Court of Cook County. We do not want to go into the question of responsibility; that is purely legal; but we do believe that we ought to attempt to advise the judges of the type of individual that committed that crime, why did he commit it, what was the social, medical and mental background of this particular individual. And in this set-up we have three psychiatrists, we have a resident psychiatrist in the jail and two other psychiatrists, we have two social workers, which will be augmented by three more very shortly, and we have a psychologist and two secretaries. We have a unit in the jail of thirty-nine cells and to my knowledge it is the first time that a psychi-

atric set-up has been formed right in the jail. All the offices are in the criminal court building. It stands to reason that we can't examine every inmate in the county jail. There are fifteen thousand in a year, and I thought and the committee figured for the first year we would only take up those cases that came up for probation. And as soon as the newspapers came out with a report about this clinic, we received letters from lawyers and mothers stating, "My boy is insane. My father is insane. My sister is insane." And we were so swamped with requests for psychiatric examinations. I doubt whether there is a mother, sister or brother that has some one incarcerated in the jail that doesn't believe that individuals has some mental abnormality. Now, you may know that in Illinois certain cases can not come up for probation. May I read a few lines:

"In Illinois any defendant not previously convicted of a crime greater than a misdemeanor, petit larceny and embezzlement excepted, who has entered a plea of guilty or has been found guilty by the verdict of a jury or by the finding of a jury in violation of the municipal ordinances, or of any criminal offense, except murder, manslaughter, rape, kidnapping, perjury, subordination of perjury, arson, larceny or embezzlement, where the amount taken or converted exceeds two hundred dollars in value, incest, burglary of an inhabited dwelling, conspiracy in any form or any of the acts made an offense under the election laws of this State, may in the discretion of the judge hearing the case after entry of judgment and nothing remains to be done by the court except to pronounce sentence, may be admitted to probation according to the provisions of this act."

Now we thought we were going to act on these cases of probation where the defendant was found guilty and where the judge was in a quandry as to what to do with the individual. The responsibility is over. The individual is found guilty. Should I sentence him or her to the penitentiary or should I put that individual on probation? Should I send that individual to the State Hospital for the Insane or to Chester? Should I send that individual to an institution for the feeble-minded? Those cases were rather simple because we were not bucking up against the proposition of malingering. Here these individuals knew that if their case came up for probation they wouldn't feign any mental illness. As time went on—we were established April 1st of this year—we began to get requests from sitting judges for all offenses in jail. We have had many, many more cases this month. Only yesterday I ran up against the first snag that we had. We had the absolute cooperation of the State's Attorney, the defense counsel, the public defender and the judges. Yesterday morning I had a request from the chief justice to examine an inmate in the jail accused of a very spectacular crime. I went in and told him I wanted to make a mental and physical examination. He said, "I am perfectly all right, but if you want to talk to me, I am perfectly willing." I talked to him about an hour, just before he consulted his attorney; he was taken to court at the termination of my hour. I went down there later to make a physical examination and he wouldn't leave his cell. He remained mute. Now we are up against the conflict of criminal lawyers. The State's Attorney is willing to cooperate. They want to know the mental condition of the individual without any biased judgment. During the past month the State's Attorney hasn't sought outside psychiatric advice. During the past month we have had five cases showing how this may expedite justice, five murder cases in Cook county where the individuals were frankly insane. The judge empaneled a jury of twelve men, the State's Attorney and defense counsel agreeing. I read my examination to these individuals. They were pronounced insane men and sent to Chester, with this verdict, that this defendant is insane but that if he recovers his sanity he will be remanded to the sheriff for trial. Formerly these individuals remained in the jail six or eight months without trial, these poor unfortunate individuals, but these are cases for the public defender. They have a new office of public defender there. Society is protected. We should have two trials. One we are not interested in, whether the man is guilty or not. That is purely legal; the responsibility is purely legal. But what type of individual committed that offense? If these individuals are frankly insane, society should be protected. We are more severe than the judges think we are. If they are mentally diseased, society should be permanently protected from those individuals. So that these individuals are sentenced to Chester with the order that they be remanded for trial if their sanity is regained.

At the termination of a year I suppose we will have some very valuable statistics and justice will be expedited. In our new jail in Cook county, a seven and a half million dollar structure, the jail is filled. You almost have to make reservations to get into the jail. The city House of Correction is on the same plot of ground as the county jail, and is filled. But, as I say, by far the greater number of criminals are outside of prison walls. When I take visitors through, it looks like an entirely black population. The reason is that the poor unfortunate individuals don't have enough money to hire skillful attorneys or any attorney at all. They are caught in the jam on Madison street and the judge has three or four hundred cases in the morning and they take the police officer's word. "Guilty or not guilty? Sixty days in the House of Correction" or a year in the House of Correction. It is mass production. When they leave after sixty days they get seven cents and are picked up before they get down town. Those are facts. I am quite sure we can make some headway. I am not promising very much but I think we will be of great assistance in a purely advisory capacity to the sitting judges, especially in cases of probation and also in major crimes if we can get hold of the individual before the criminal lawyer gets him. (Applause.)

Dr. Norbury, in closing: I have nothing more to add in particular. I do want to congratulate Dr. Read on the work being done at the Elgin State Hospital. This is an index of what can be done in the other

State Hospitals of Illinois. Unfortunately, all things considered, there is a certain amount of handicap that necessarily follows in an organization and service of that kind. I think Illinois is deserving of the very best of service and should consistently pattern after the old established services that are not controlled by political expediencies. Such firmly established services as are found in Massachusetts, New York, New Jersey and in the State in which I at one time was engaged, Pennsylvania. Illinois, in its hospital service, has had trying and peculiar misfortunes in its experiences in trying to establish dependable permanency. For a number of years I have been acquainted with this service and in part, in an official capacity. When we once get established what seems to be a dependable regime, with prospects for accomplishing something worth while, in perfecting an organization and have secured young men with capacity and enthusiasm for such service, lo and behold! here comes a political turn over and the whole thing has to be done over again. Surely we need a broader vision than that of simply building more buildings to house more patients. This is the era of mental hygiene, of prevention, of trained staff medical officers.

(Dr. Norbury's paper was published in October Journal.)

Dr. Meyer Solomon (closing), Chicago: Just a few points. One with reference to the percentage of feeble-minded amongst the delinquent. In the psychopathic laboratory in Chicago, although we get a highly selected group of persons who are suspected of being mentally disordered or mentally retarded, only approximately twenty per cent. were mentally retarded during the year 1930. Figures elsewhere, at the county jail survey in the east by Overholzer and his group, out of about fifteen thousand male prisoners examined, about seven per cent. were definitely mentally retarded and nine per cent. were dull or borderline. Healy and Bronner of Boston found that in four thousand cases of juvenile delinquents about ten per cent. were definitely mentally retarded, showing that the delinquency problem and the mentally retarded are really not synonymous.

One more point. After all, in the courts and prisons we get relatively end-results. The resolution of the crime problem and prevention of delinquency lies not so much in the courts and prisons. It is rather in the pre-court period, the extra court period, the home, the school. We need the development of pre-school mental clinics in conjunction with our ordinary pre-school physical clinics, the development of mental hygiene in the public school system, and we need also the education of parents in better training their children. Of course, the criminological problem is interrelated and interwoven with the social, educational and industrial system, and it isn't the function of the psychiatrist alone. It is a matter for the educator, the psychiatrist, the sociologist, jurists and others, a matter of inquiring into neighborhood conditions, the conditions under which children spend their leisure, the kind of parents and a host of other elements which enter into the situation. The psychiatrist has his particular contribution, but the solution of the crime problem doesn't depend entirely upon the psychiatrist.

(Dr. Solomon's paper was published in November Journal.)

Dr. Wilgus, in closing: Mr. Charles Armour, the principal of one of our schools in Rockford, made a little study of what became of approximately one hundred of these retarded children of his opportunity classes. According to my recollection, eleven only out of the hundred were committed for having committed crimes. On the other hand, most of the others became self-respecting citizens. I was quite surprised and deeply interested to know that one of the women was in charge of a floor of one of the largest knitting concerns in the city. One of the boys was earning $175.00 a month and others as high as $200.00. Mr. Armour made this observation over a period covering six years.

(Mr. Wilgus' paper was published in October Journal.)

Dr. Smith, in closing: Dr. Hamill's talk this morning presents the importance of physical relationships in the problem of mentally deficient children. Blood in the spinal fluid at birth is a fact of great importance. My interest in the relationship of birth injuries has occasioned the examination of a number of infants shortly after birth as well as re-examination over a period of four years. As a result, oftentimes, it was found that the neurological picture shows marked changes at the time of birth, but as years go by many disappear so that many of the cases which are looked upon as primary cases of mental defect are, in reality, cases directly due to a real injury or encephalitis. It behooves, therefore, the average practicing physician, and particularly the family physician, to pay more attention to these trivial changes in the early birth history of babies. Later in life these minor changes may lead to definite evidences of personality defect or deficiency.

A sufficient discussion of the crime facts has been covered by Dr. Solomon's paper. Certain facts, however, do stand out. In 1924 I had an opportunity to make a three months survey with the New York Prison Commission. A definite study of each of these cases emphasized the fact that behavior problems existed not only at the time of the individual's first offense, but existed back into the preschool life of the person. These personality alterations, therefore, undergo alteration, but the essential character remains unchanged. In other words, the child has not made the most of its opportunities. Sometimes these are environmental conditions. There is a definite relationship to physical defects which have an altering influence upon the child's personality. One should not blame the feeble-minded for crime.

Certain studies in New York survey have shown that many of the so-called retarded criminals, upon group examination, are placed there because of emotional and mental factors. One prisoner, upon being beaten in a game of poker, so changed in his intellectual reactions that he finally came out with an intelligence quotient of over 120 and not mentally deficient

at all. To be definitely reliable the examination of the personality of the individual should be made within the individual cell for removal therefrom alters many of his fundamental reactions and we get a misleading diagnosis. It is necessary to get down to the metal plane of the individual if we are to study personality and these can only be gained through obtaining the confidence of the group.

Our studies were made under the most favorable of situations for the authorities at Albany had ruled that any testimony given to our group could not be used against the patient. Information thus received showed how greatly it varied from the facts presented in court. It demonstrated how the social situation of the individual, his environmental relationships, and the facts concerning that particular individual's life which brought him into that particular situation is of utmost importance and are necessary before one can make definite recommendations.

(Dr. Smith's paper was published in October Journal)

THE TREATMENT OF PYELITIS IN CHILDREN WITH B. COLI BACTERIOPHAGE.*

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B. Coli. Bacteriophage Filtrate, according to Arnold,[1] as used therapeutically, usually means "a Berkefeld or similar filtrate of broth cultures of B. coli which have been dissolved by a lytic principle. This material contains the peptone and meat extractives of the broth, the dissolved bacterial proteins (probably unchanged) and a transmissible lytic principle. The protein content of the material must be borne in mind when this preparation is used. The therapeutic effect of bacteriophage filtrates is attributed 1. to the protein of the dissolved bacteria which is in the form of a very readily available antigen, 2. to the transmissible lytic agent, which is capable of dissolving homologous bacteria, 3. to foreign protein shock when the material is injected, or 4. to a combination of the foregoing." He further states "that whatever mechanism may be operative, it is known with certainty that, following the use of bacteriophage, the opsonic index is greatly increased and that all the antibodies that can be produced by the heat killed organisms are also produced by filtrates of bacteriophage lysed cultures."

As far back as 1922 Courcoux, Philibert and Cordey,[2] and in 1925 Munther and Boenheim,[3] and Zdansky[4] have treated infections of the urinary tract by subcutaneous injections of bacteriophage.

My attention was first called to the therapeutic use of this material two years ago last summer. I had an infant three months of age under my care with what I thought an incurable medical case of colon bacillus pyuria. Everything in the category of medicines was used; in addition the child was given three ultra violet ray treatments, weekly. However, it contined to cry, remained stationary in weight and the urine as passed would be comparable macroscopically to a good grade of milk. Microscopically it contained pus in abundance, too numerous to count. After this child had been under my care for a month or more with no appreciable improvement, the family moved to Springfield, Illinois, where the case was referred to Dr. Blankmeyer. Finding that the urine contained almost a pure culture of colon bacilli he gave a few subcutaneous injections of B. coli bacteriophage which was prepared at the Illinois State laboratory. The improvement was miraculous in that the urine cleared up macroscopically, the child stopped its fretting and crying, the appetite increased and immediately it started to gain in weight. At the end of another month the urine was practically normal microscopically and the child had gained two pounds in weight. I had an occasion to see this child three months later. The urine at this time was entirely free of pus cells microscopically, and a culture was reported negative for colon bacilli. I later reported this case to Dr. Lloyd Arnold of Chicago and he has been kind enough to furnish the material I have used in the following work.

The cases herein reported are a selected group. I selected only the ones that I felt were impossible to clear up under ordinary medical treatment. The number of cases are very few, but my idea in making this report at this time is to call your attention to the subject and stimulate further work in this direction.

I use the term pyelitis assuming that a pyuria in children in most cases is not limited to bladder infection. Only by use of the cystoscope can we distinguish between the two. As we all know pyuria is frequent in children and the majority of cases will respond very nicely to careful medical management. Nevertheless there

*Read before the Section on Medicine of the Illinois State Medical Society, May 7, 1931, at East St. Louis.

is a certain percentage of cases that need come to surgical intervention. Will the use of colon bacillus bacteriophage reduce this number?

For simplicity I have made the following division of cases. The total number treated is fourteen, twelve of which were successful and two unsuccessful. Of the twelve successfully treated cases ten showed a pure culture of colon bacilli and two showed organisms of mixed infections in the urine. Of the two unsuccessfully treated cases, one showed a pure culture of colon bacilli and the other organisms of mixed infections, such as B. coli, staphylococci, non-hemolytic streptococci, and diphtheroid bacilli.

PURE CULTURE OF B. COLI—SUCCESSFULLY TREATED

Case 1. A girl, aged three and a half years. Admitted to the office September 10, 1930, complaining for six weeks of intermittent fever, associated with painful and swollen joints. Urine contained many pus cells in an uncentrifuged specimen. Diagnosis of an acute rheumatic fever with an associated pyelitis was made. Ordinary medical treatment such as urotropin, pyridium, etc., was instituted to combat the urinary infection. One month later there was quite an improvement in the microscopic picture of the urine and the temperature elevation had subsided. October 24 she returned with a temperature of 106 P. Mother stated that two days before she first noticed an elevation in temperature. The child did not appear acutely ill, but was sent to the hospital for future management. The urine was loaded with pus cells. Culture showed a pure strain of B. coli. No medicines were given internally. One-half cubic centimeter of B. coli bacteriophage was given subcutaneously at noon. Twelve hours later the temperature reading was normal and remained so thereafter. The following day 1 cc. of the bacteriophage was given, and this dose repeated every other day, making five doses in all. At the end of a week the urine culture was negative. She has had three such negative cultures since then, the last one recorded in February, 1931.

Case 2. Baby boy, aged 7 weeks. Admitted to the office August 8, 1930. Birth weight 8½ pounds. Present weight 7 pounds and 6 ounces. Breast feedings every two hours, alternated with different trial combinations of cow's milk, Eagle Brand, etc. Temperature 102.6 R, markedly ill and underweight baby. W.B.C. 8,000, R.B.C. 3,000,000 and HGLB 60 per cent. Urine revealed two plus albumin and microscopically it was negative for casts but was loaded with pus cells. Culture showed pure B. coli. Six injections of B. coli bacteriophage were given in 1 cc. doses every other day. After the third injection the temperature was remaining normal and baby was discharged from the hospital. September 3, three weeks later, weight was 8 pounds 4½ ounces. Urine negative for albumin, but microscopically contained many pus cells. At this time 1 cc. of bacteriophage was given and repeated September 10, 17 and 18. September 10 baby weighed 8½ pounds—a gain of 1 pound 2 ounces in one month. September 27 weighed 9 pounds 10 ounces. The mother's breast feeding was discontinued at the onset and protein milk was substituted. Many treatments of quartz lights were used. Throughout the winter months it was given small doses of serenium at different times. On April 17, at ten months, the child weighed 20 pounds 2 ounces. The urine culture was free from B. coli.

PURE CULTURE OF B. COLI UNSUCCESSFULLY TREATED

Case 3. Girl, aged one year. Admitted to the office March 21, 1930. Intermittent temperature of three days duration, associated with an upper respiratory infection. Urine, microscopically, loaded with pus cells. Medicinal treatment instituted and temperature returned to normal. She had a stormy convalescence and on April 12 she was still quite fretful, had no appetite and urine was still loaded with pus cells. One pyridium tablet, daily, was ordered one week of each month. Almost weekly examinations of the urine was made, each time finding many groups of pus cells. October 21, 1930, she had another severe attack of pyelitis. The urine contained a trace of albumin, no casts and many groups or clusters of pus cells; culture revealed a pure growth of B. coli. One half cc. of bacteriophage was given subcutaneously on October 24 and 1 cc. repeated Oct. 28, November 1 and November 4. On November 21 urine showed only an occasional cluster of pus cells. February 21, 1931, four months later, she developed another head cold and otitis-media and the urine was loaded with pus cells. One cc. of bacteriophage given, increased to 1½ cc. February 24, February 28, March 11 and March 18. March 25 urine showed eight to ten groups of pus cells. Urotropin and sodium acid phosphate given. April 20 five to six pus cells per field, no groups, culture positive for B. coli, urotropin continued. The summary of this case reveals that this child was treated medicinally, almost continually, for pyelitis from August 8, 1930, to October 24, 1930, with no appreciable results. After this time she was given ten subcutaneously injections of bacteriophage and to date, April 20, 1931, the urine culture still is positive for B. coli. Feeling that she must have some organic urinary obstruction she will be referred to a urologist for further study.

MIXED INFECTIONS UNSUCCESSFULLY TREATED

Cases 4 and 5. One child was 14 months, who was treated with B. coli phage at various periods with little success. She now has a chronic nephritis and is improving very slowly. The other case, a child 3 years old, who had an associated nephritis and died of uremia in April, 1930. I did feel, however, it prolonged her life, for she was given the bacteriophage while almost in a moribund state and she lived six weeks longer. Her urine contained B. coli, staphlococci and non-hemolytic streptococci.

COMMENT

In one case only was there any general re-

action and that consisted of chills and a secondary rise in temperature within three hours after the injection, which lasted only a few hours. The local reaction consisted only of a slight erythema and swelling at the site of the injection.

From this report my general inferences from the cases cited are that, in the urines that have a pure culture of B. coli the results are exceedingly good. In cases that have a mixed infection with B. coli predominating the treatment seemingly is harmless and certainly is worth a trial. Where there is an associated nephritis I doubt if there is any value in it, although I feel it might be tried.

The results are still unexplanatory even if good. Perhaps it might be because of the foreign protein reaction such as we have in boiled milk injections, etc., or there may be some split product given off by the lysed bacteria.

SUMMARY

1. Fourteen cases are mentioned in this paper. Twelve or eighty-five per cent. were treated successfully.

2. All of these cases were previously treated with the usual medicinal therapeutic measures and did not respond.

3. We must consider its value in view of the good results despite the fact that we can prove no specific action.

4. The number of cases is too small upon which to base any permanent claim.

5. Since there is no visible harm in its usage, then why not try B. coli bacteriophage subcutaneously in the ordinary cases of colon bacillus pyuria and pyelitis that confront us from day to day, which probably may reduce the incidence of surgical proceedings?

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DISCUSSION

Dr. H. S. Maupin (Quincy): I do not think I will have anything to say that will add to the paper, since eighty-five per cent. of his cases that will not respond to medicine respond to bacteriophage. Pyelitis is a very easy disease to diagnose, but when we come to the treatment of pyelitis we sometimes have difficulty.

We have two types of pyelitis. One is the ascending type, and most of this type occurs in girls, because about 80 or 90 per cent. of the pyelitis cases occur in girl children. The ascending type is the type that will respond very easily to medical treatment. I have always used hexylresorcinol with very good results in these cases, and yet you will get a case of pyelitis with an alkali urine that will not respond to hexylresorcinol. I have written to Sharp and Dohme and asked the cause of this, and they say that it works well in both alkali urine and acid urine, but it does not prove out that way.

The hematogenous type of pyelitis is supposed to be an infection that is taken up by the blood and the bacteria are excreted in the urine. If you get a type of pyelitis that is hematogenous, you have more difficulty clearing up the condition. So I think that probably in this type you will get very good results with your bacteriophage, because you will get the opsonic index and the children will respond more perfectly.

I have used quite a bit of the stock vaccine in pyelitis and have had very good results in some of these cases. I do not think that I have gotten as much as 85 per cent. cured, yet I have had them go over three or four years without any return of the trouble.

I think the reason the Doctor is getting good results with bacteriophage is that he is getting this preparation made by Dr. Arnold and it is a fresh product. I do not think it is so much the foreign protein that he is getting in it, as it is something else in it that is causing our good results. There are different kinds of serums on the market. We have very good houses putting out serums, and I have used them. At one time I thought I would quit using serums, but I happened to take a patient to Chicago to Dr. Frederick Mueller and he recommended that I use a vaccine on this patient. I said, "I don't believe in it very much." He said, "Take this and try it." He gave me a bottle of Sherman's vaccine. I got very good results with it. Sherman's vaccines are sterilized with phenol and not heat. I think that is the reason you get better results with these vaccines than with some others.

Dr. B. Markowitz (Bloomington): I am inclined to believe that the good results obtained in the use of bacteriophage as shown by Dr. Cline are due to the split products of the organisms rather than the foreign protein.

We have had occasion to make and use colon bacillus and staphylococcic bacteriophage in adults, in which our results were quite satisfactory, particularly in the staphylococcic phage used in chronic osteomyelitis. Some cases seem to clear up miraculously; others don't do so well. We cannot explain why one will and the other will not. As a general rule, we have found that in the infection from which a pure culture of either staphylococcus or colon bacillus is obtained, the use of a phage made from this specific organism will give a high percentage of cures; probably as high as Dr. Cline has had. The use of a colon bacillus phage in

a pure colon infection is attended with very good results. The cases that do not respond very well are those in which there is a mixed infection. If the colon bacillus predominates even in a mixed infection the use of a colon phage may produce fair results. The cases in which we have obtained the best results were those in which we had a pure culture of either colon or staph.

On the whole, as Dr. Cline said, while the colon bacteriophage is not a panacea for all illnesses of the urinary tract and certainly will not respond in 100 per cent. of the cases of colon infection, I think its use is warranted in the cases indicated.

Dr. H. N. Allen (St. Louis, Mo.): My interest in bacteriophage is almost purely that of the laboratory man. From this standpoint I want to bring out a couple of points that Dr. Cline has not particularly mentioned.

In the first place, in the case of colon bacteriophage, it is a very easy matter to produce an autogenous-phage. In chronic pyelitis, it seems to me that it is never necessary to use anything but an autogenous-phage. This is produced from sewage water. As all sewage water has a phage for all colon bacilli emptied into it, it is comparatively easy for us to produce an autogenous-phage for every colon infection. I should like to know whether in Dr. Cline's failures he tried an autogenous-phage.

The second phase is this: I have never seen bacteriophage render any benefit to a patient after the second injection. If we do not get benefits within the first two or three injections, we do not expect results from bacteriophage.

We have a very interesting laboratory experiment which shows us the danger of using more than two injections. If you will take the staphylococcus from a guinea-pig's skin, an organism which is perfectly harmless to that guinea-pig, and produce an autogenous-phage and inject the guinea-pig with that autogenous-phage, you will find that after seven or so injections the guinea-pig will die from staphylococcic-septicemia, as a result of this previously harmless bacteria. We have presumably a case of that in our hospital, I am sorry to say. It was a case of an infection of the foot, The patient was benefited by one injection of the bacteriophage, and the surface changed so completely and the doctor was so pleased with the results that he made seven or eight other injections of this bacteriophage, with the result that the infection spread and the patient's leg was amputated at the hip. The terrific extent of this infection was possibly due to the repeated injections of bacteriophage.

My experience clinically, as far as babies are concerned, is with one case of staphylococcus-meningitis, which we ordinarily consider as having a very poor prognosis. A large dosage of bacteriophage was given intravenously. We advised that it should be given intraventricularly, but 25 cc.s were used intravenously, with the result that the baby woke up twenty-five hours later, called for his milk, and held it down, and at the present time is perfectly normal. That was eight months ago.

From the laboratory standpoint I would suggest only the use of a fresh phage. A proprietary phage seems to be of little value after it has stood around a while. Whenever possible, I would suggest the use of an autogenous-phage.

I would like to digress a moment from pediatrics to one other use that we have of colon bacteriophage—that is, in cases of peritonitis. We have had some beautiful results with generalized peritonitis.

In East St. Louis, Granite City, and along the east side of the river, it is not uncommon to be called out in the middle of the night because somebody has been shot a number of times through the abdomen. These cases ordinarily go on to a peritonitis and a lot of trouble. A surgeon in Granite City at the present time says that he thinks that after this he is going to close up abdomens completely instead of draining them, because during his operations lately he has sewed up the holes in the intestine, poured bacteriophage into the peritoneum, and he has had so far in some ten cases a 100 per cent. lack of peritonitis in these cases. The application of a mixed staphylococcus and colon bacteriophage in the peritoneum at the time of operation has apparently produced wonderful results. Now, the bacteriophage that is used is not only a bacteriophage, as the Doctor has brought out, but it is also a very highly soluble vaccine. It is a solution of this bacteria in the growth together with all the bacterial products as they grew. This is very close to the anti-virus of Besredka, an almost identical product. So the effects that we get with bacteriophage may simply be the same effects that Besredka claims he gets with his anti-virus. I don't believe this, but it may be true.

Dr. Gerald M. Cline (Bloomington): Thank you gentlemen for your liberal discussion. I am particularly glad to hear from Dr. Allen.

I will admit that the results that I have obtained from the use of bacteriophage seem too outstanding. These facts must be kept in mind because it is easy to become too enthusiastic over its use.

I did not mention the use of bacteriophage in kidney and bladder irrigations which some men are doing. This entails surgical procedure which I am trying to avoid. It is particularly for this reason that I bring the hypodermic use of this material to your attention which may easily be carried out in an ordinary office practice.

At this time I am treating one case which I did not report. It is of a mixed infection staphylococci and B. coli. We are using a mixed phage in this case, and the results at the time I left were very good, but, of course, I have not had time to follow it up long enough to know what the end results are going to be.

In answer to Dr. Allen, I have not used the antogenous-phage as mentioned, the material I used was a stock phage furnished me by Dr. Arnold, whom I am sure feels that since there is such a debatable point as to just what it does and what it is, that he is not committing himself on whether he thinks the antogenous-phage has any benefit over the stock phage.

It seems to me Dr. Allen has given the keynote as to the number of injections to use. This has not occurred to me. However, in applying this to my cases, I remember that all the successful cases did react favorably after the first injection and you will remember that one of the unsuccessful cases had in the neighborhood of ten injections with no results. I am mighty glad to have this suggestion and word of warning from Dr. Allen.

I was also interested in the Doctor's report of the case of staphylococcus meningitis. I had such a case a few months ago that terminated fatally. It never occurred to me to use bacteriophage. I believe I will be tempted to use it if such a case presents itself.

In conclusion again, I will say that I do not claim anything new in what I have given you. You have heard the results which probably will stimulate more work in this line, particularly among the general practitioners who no doubt see more pyurias than the specialists. I do not feel that I have done any harm so far by its use and furthermore feel it is worth a trial in the ordinary cases we see from day to day. If it does prove valuable certainly we will reduce the incidence of surgical procedures.

ERRORS IN DIAGNOSIS OF HYPERTHYROID DISEASE*

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CHICAGO

Notwithstanding the voluminous literature on the subject of hyperthyroid disease and its frequent discussion in medical assemblies, it is surprising to still find a large number of thyrotoxic patients who make the rounds of clinicians for years, under erroneous diagnoses of neurasthenia, heart disease, tuberculosis and many other chronic and wasting diseases.

The early diagnosis of hyperthyroidism is without question the single most important factor in the thyroid problem considering our present knowledge of the disease. The condition is a steadily progressive disease and results in far-reaching and irreparable damage to all organs and systems of the body, but especially to heart, kidney and nervous systems.

Recognition of the existence of hyperthyroidism therefor, permits for no temporizing, as there is almost unanimity of opinion that surgery offers the best and most prompt arrest of disease and its effects. This should be resorted to as soon as the patient can be properly prepared. The management of the hyperthyroid, preoperatively, the operative technique and the postoperative care, have become almost standardized; however, a disease which is so prevalent and resembles and is mistaken for other conditions so frequently can be profitably studied from the standpoint of diagnosis.

Errors in diagnosis of hyperthyroid disease are made less often in the acute case than in the more slowly developing forms. The acute hyperthyroid patient presents a train of striking symptoms and signs which offer little difficulty in recognition.

The skin is hot, moist and flushed, there is a rapid pounding heart, and a full bounding pulse. There are rapid ceaseless movements of the body, a high nervous tension, and the patient gives vent to emotional outbursts. A tremor of the tongue and hand can be detected. Exophthalmos may be present or what is more frequently observed, a staring expression of the eyes caused by the infrequent winking and widened palpebral fissure. The presence of a thyroid enlargement on inspection or even on palpation is not essential to a correct diagnosis, but a basal metabolism determination will show an increased metabolic rate.

It is in the case with insidious onset and the borderline case that errors in diagnosis most often occur.

Usually in this type of the disease, there is a history of poor health, and a tendency to "nervous breakdowns" dating back for some years. A state of fatigue exists and there is a progressive loss of weight in spite of a good appetite. Only one other condition presents the combination of increased food intake and loss of weight, diabetes mellitus, and the differentiation can be readily made by a blood chemical examination and urinalysis.

Even early in the disease and in the mild forms palpitation is present. Palpitation may present itself at any time, even when the patient is in complete repose. Parenthetically (it may be well to consider hyperthyroidism when a case of paroxysmal tachycardia is encountered, and a metabolic test done.)

The pulse pressure is higher than normal. The diastolic reading is uniformly lower, the systolic may be normal or slightly elevated. Aortic regurgitation is the only other condition which shows an increased pulse pressure, and in this condition the murmur at the base of the heart, diastolic in time, the presence of a

*Read before Alumni Conference, University of Illinois, June 12, 1931.

capillary pulse and Corrigan pulse and the fluoroscopic tracing will establish the diagnosis.

The characteristic stare of the eyes which was mentioned, is noted frequently in this group and in my experience has been the single finding which directed my attention toward a correct diagnosis, most often. Clute and Adams failed to find a goiter palpable in over 50 per cent of borderline cases.

The condition most frequently confused with hyperthyroidism, is neuro-circulatory asthenia. One of the outstanding differences in these two conditions, is the mental viewpoint.

The neurasthenic is pessimistic about his condition, non-cooperative and sluggish in his movements. The hyperthyroid is optimistic, alert and quick in his movements, speech and response.

Both complain of weakness and fatigue. The asthenic patient makes little effort to overcome this weakness, the hyperthyroid extends himself beyond his strength. This has been used as an important diagnostic aid. Quadriceps muscle weakness is a common finding in the thyrotoxic patient. If he is made to sit on the edge of a chair and told to extend his leg and thigh at right angles to the body, he will raise the extremity with difficulty and as it sags, will force it up and lacking strength to keep it up, slowly lower it. The asthenic patient asked to perform the same test, will make a weak effort to raise the limb, and permit it to drop like a dead weight.

The neuro-circulatory patient complains of lack of appetite which is not borne out by his appearance. As a rule he is well nourished, in contradistinction to the progressive loss of weight in the thyrotoxic case.

While it is true that the finding of an increase in basal metabolism does not always mean hyperthyroidism (we recognize that positive readings are encountered in polycythemia, leukemia, cardio-renal disease and in febrile states); a plus 20 or more will lead to the discovery of other signs and symptoms. Our viewpoint toward this aid in diagnosis should be somewhat similar to our attitude to the x-ray as a confirmatory aid, and considering the irreparable damage that the unrecognized case does, the more frequent use of the metabolism test in doubtful and vague cases can be of inestimable value.

Many cases are diagnosed as rheumatic or hypertensive heart disease which in reality are cases of thyrotoxicosis.

A loud, thumping sound at the apex has been described as pathognomonic of the thyroid heart. I have not been able to substantiate this. Hyperthyroidism causes little if any cardiac enlargement. Some hypertrophy may result from a long standing tachycardia, but the toxemia apparently causes no enlargement.

The greatly enlarged heart with or without decompensation, with evidence of mital stenosis and aortic regurgitation, will disclose a rheumatic history on inquiry.

The hypertensive heart case occurs in patients over 40, the basal systolic pressure is over 150, frequently there is an hypertrophied left ventricle and there may be kidney changes as shown by the blood chemistry and retinal vessel changes.

In our experience, the differentiation between the thyrotoxic heart and organic heart disease due to rheumatism and hypertension is best determined by the therapeutic test.

Thyrotoxic tachycardia is not influenced by rest and digitalization, the rheumatic and hypertensive hearts are definitely benefited and slowed up by this therapy, or if the nephritic signs predominate, by the addition of diuretics.

Conversely, under lugol therapy the tachycardia of the thyroid case is quieted, even with the patient up and about, but has no influence in the other types.

The Goetsch adrenalin test has been of no real assistance in the borderline case.

True cases of hyperthyroidism have come to our notice which have been diagnosed tuberculosis, diabetes, psychosis and asthma.

In this connection it may be well to remember that a concomitant disease may be present with hyperthyroidism, but care should be used not to confuse a substernal gland producing pressure symptoms on the trachea, with asthma, nor fail to appreciate that the nervous instability of the hyperthyroid may be of such intensity as to approach a state of insanity.

The operative work in these two types of cases has been especially gratifying from the standpoint of relief, in cases considered beyond medical aid, in view of erroneous diagnoses.

The transition of a simple adenomatous thyroid to a toxic thyroid can frequently be accurately traced. We have seen a number of cases first show signs of activity, following severe

mental strain, fright, shock and worry. This may also happen after an acute infection, such as tonsillitis, pneumonia or diphtheria.

Thyrotoxicosis should suggest itself if after an acute infection the convalescence is prolonged and the patient complains of marked exhaustion, especially if the pulse remains rapid even with complete rest and with a normal or subnormal temperature. On several occasions we have encountered such cases, and further study invariably showed a high pulse pressure, tremor and a positive basal metabolism test.

The incidence of hyperthyroidism and pregnancy has received much attention, and there exists much diversity of opinion as to etiology and management. Many take the position that hyperthyroidism is present in this group prior to the pregnancy, and that pregnancy does not intensify the disease. From our observation of a fair number of these cases we are convinced that irrespective of the presence or absence of hyperthyroidism before pregnancy the symptoms of thyrotoxicosis found in cases of pregnancy, become more marked as pregnancy progresses. Some of these cases can be successfully carried to term; however, with increasing symptoms a decision must be made whether to empty the uterus or perform a thyroidectomy to arrest symptoms and protect the mother. We have usually chosen the thyroidectomy done under local anesthesia, and have had the good fortune to see the pregnancy continue uninterruptedly to term.

No hard and fast rules can be laid down for the detection of the insidiously developing toxic thyroid. In no case are all symptoms enumerated, present, however if the clinician will be thyroid conscious and be watchful for the characteristic signs, of which those most commonly present are, loss of weight in spite of plentiful food intake, tachycardia, high pulse pressure and eye stare, a correct diagnosis and proper management will result.

Conclusions:

1. Errors in diagnosis are most frequently made in slow developing and borderline cases. Hyperthyroidism most often is confused with organic heart disease and neurocirculatory asthenia.

2. Irreparable damage to the viscera can be avoided by the early recognition of thyrotoxicosis. The treatment is accepted generally to be subtotal thyroidectomy.

3. The history of onset may be an important diagnostic aid. Exhaustion which is prolonged following an acute infection or after severe mental strain, associated with tachycardia when at rest, should call for a metabolism reading.

4. A consciousness of the widespread prevalence of hyperthyroidism often with few but characteristic symptoms, will result in its more frequent detection.

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REPORT OF A CASE OF RECURRENT HEMORRHAGES INTO THE VITREOUS. (EALES DISEASE?)

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On October 6, 1909, a vigorous, athletic boy of sixteen, whom I had previously known, came into my office complaining that he could not see. Vision right eye was 20/200ths, left eye fingers at one foot. He lived in a village thirteen miles distant and was starting his junior year at Rockford High School. On the previous Labor Day he discovered that while catching behind the bat he could not judge the ball. A month previous, while also catching behind the bat, he was struck on the left temple by a ball, knocked down, got up and finished the game. The ophthalmoscope showed chorioretinitis more advanced in the left eye, without exudates in either eye. Without comment on his condition, I immediately sent him to see the late Charles H. Beard. I wanted his unbiased findings and advice.

The family consisted of the father, an older brother and sister, all in good health. The brother wore very strong compound plus lenses. The mother died in 1900 of pernicious anemia. Three months before her death she was delivered at full term of twin babies. They lived only a short time. No miscarriages. The Wassermann and von Pirquet tests made at the Maxmillian Herzog Laboratory were negative. The blood and urine findings were normal.

On October 9 I received the following report from Dr. Beard: "The clinical picture as given by the ophthalmoscope resembles nothing so

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much as that of a severe acute chorioretinitis, which is most often of syphilitic origin. Do you suppose the boy could have syphilis? I would suggest high and progressive dosage with iodide of potassium and pilocarpine sweats, in a hospital. To this could be added inunctions of mercury. This last could do no harm and might do a world of good."

He was hospitalized and pilocarpine sweats with increasing doses of iodide of potassium were given. He almost immediately had a hemorrhage into the vitreous of each eye. His vision was reduced to the projective of light. The pupils were non-illuminative. The sweats and iodide of potassium were continued alternating with mercurial inunctions. On the last of October he was again seen by Dr. Beard who advised continuing the treatment. On November 30 the left pupil was dilated. At the request of his father he was seen by Dr. Casey Wood. At the suggestion of Dr. Wood on December 3 he was given subconjunctival normal salt injection, which caused a great deal of pain and was not repeated. On December 5 there was pain in left eye and plus tension—secondary glaucoma, which was controlled by hot applications, morphine and eserine. Tension right eye minus. He went home January 31, 1910, having a vision of 20/70ths minus one in the right eye and not perception of light in the left. The ophthalmoscope showed in the right eye a diffuse red haze, the disc could be made out indistinctly. The left eye nil. All medication was stopped. March 1, 1910, the vision in the right eye had risen to 20/50ths minus one. He was given 1/40th grain of strychnine three time daily for two weeks. April 11, 1910, he was readmitted to the hospital and for a week was given pilocarpine sweats. April 22 vision in right eye was 20/40ths minus one. May 3 he was given 1/4th grain protiodide of mercury three times daily for three months. September 12 he went to see Dr. Wood who was out of the city. He saw Dr. Frank Allport of the same office who wrote me as follows: "The left eye has been and is not. The right eye looks good on the outside, there is a good pupillary reaction, and there is no tension. His vision I find to be 20/40ths and can be increased to 20/30ths by — 0.75 axis 90. I have taken his field of vision and find it to be fairly good, notwithstanding the fact that the ophthalmoscopic examination shows a pretty badly disorganized fundus. I find his vitreous to be rather hazy, the outlines of the disc indistinct, a good many choroidal tears and a good many choroidal and retinal exudates."

October 4, 1910, about noon, he could not see out of the right eye, fingers poorly at one foot, red condition of fundus, but cannot make out any detail. Sent to hospital. Pilocarpine sweats begun on 5th and continued to 14th. Then mercurial inunctions and potassium iodide to October 24, when he could see better and the haze was not so dense as shown by the ophthalmoscope. Sweats again for a week when he went home November 2 with a vision of 20/40ths. Hospitalized again on December 6 and given sweats for eight days, at the end of which time he went home with a vision of two letters in 20/40ths. December 29 had a slight hemorrhage and his vision dropped to 20/70ths. Under 1/4 grain protiodide of mercury three times daily his vision soon returned to 20/40ths minus one. He was kept on protiodide of mercury until July 17, 1911, when his vision was 20/40ths. September 11, 1911, his vision was 20/30ths. Left lens had become opaque.

January 17, 1914, everything was hazy before right eye. Counts fingers at two feet. Ophthalmoscope shows red glow with white spot deep in the fundus. Was given pilocarpine sweats alternating with inunctions and potassium iodide to February 24 when his vision was 20/40ths. Ophthalmoscope showed the fundus slightly hazy with white membranous-like patch slightly below center in vitreous, and also a large black splotch to nasal side. These changes in the fundus were seen with plus eight. His temperature for several days had been slightly below normal. He was given four pilocarpine sweats to February 28 when he went home and was again put on protiodide of mercury. March 7 his vision had risen to 20/30ths.

May 15, 1914, he had another hemorrhage into the vitreous, was sent to the hospital and given sweats alternating with inunctions and iodide of potassium to June 5 when his vision was 20/100ths. Could not get any detail of the fundus. The deep white spot that had been in its present location had a black stringer attached to it and the stringer floated. He was given pilocarpine sweats to June 10 when his vision was 20/50ths slowly. Was unable to get any detail of fundus. If there was any change the black

stringer was more dense than at previous examination, and bifurcated at the distal end. Pilocarpine sweats were continued to June 20, inclusive. Fundus had a diffuse red haze—could make out some of the blood vessels, black stringer still in evidence, obscuring the fundus to some extent. Much to my surprise he read 20/40ths and some letters in 20/30ths. He went home June 20, and potassium iodide was prescribed. June 27, 1914, his vision was 20/30ths. His hemoglobin was low, coagulation time rapid. Freshly prepared Blaud's pills were given. July 8th ophthalmoscope showed floater contracted in size—looked like a thread with end enlarged, not so free to float as originally. Saw occasionally until March 10, 1914, when vision was 20/30ths plus. The floater had developed a larger head and was bent down toward the retina, seen with a plus 7.

January 11, 1917, while lifting, patient fell, striking back of his head on ice. Had a hemorrhage into the vitreous, was sent to the hospital. Ophthalmoscope showed red haze, but could make out disc and blood vessels indistinctly. Potassium iodide was ordered. January 17, vision was 20/30ths minus 2. Went home on that date. January 30th had a slight hemorrhage. Advised bed rest and continuance of potassium iodide. February 3 the ophthalmoscope showed a slight flame shaped hemorrhage from a vessel in the white spot previously mentioned. This white tissue moving out toward the temple side in a semi-transparent membranous streamer, retinitis proliferans. Hemoglobin was low and coagulation time very slow. Was given freshly prepared Blaud's pills and calcium lactate for five days. February 26 was sent to the hospital and given sweats to March 7 when his coagulation time was normal. He went home on that date with a vision of 20/30ths. This was the last of five massive hemorrhages into the vitreous that he had, the first October, 1909, the second October, 1910, the third January, 1914, the fourth May, 1914, and the fifth and last January, 1917.

At the present time his vision in the right eye is 20/30ths, slightly improved with — 050 ax 180, which he does not wear. The fundus is normal save some bands of choroidal atrophy and pigment proliferation in the lower periphery, extending toward the nasal side, also a small patch of retinitis proliferans. This patch has none of the usual fibrous white tissue in it but resembles a tuck in the retina, starting from a round spot of pigment on the disc situated between the center of the disc and the nasal edge. This tuck is about a millimeter and a half high and extends forward and downward five or six millimeters. I am sorry that I am unable to show you a picture, but I could not find a fundus painter like the late Margaret Washington and I do not think a photograph would be satisfactory. I was timid about attempting it on account of the necessary bright light. The left eye has a tremulous opaque lens, aside from the white pupil and the fact that it is a blind eye, it causes him no annoyance.

I was unable to find in the fundus any indication of the source of the hemorrhages. According to Collins and Mayou they must have come from the ciliary vessels. The vitreous was filled with blood, resembling a dense red fog, which gradually lifted as the blood was absorbed.

At this late date I do not know the etiology of this case. At the time all who saw the patient were inclined to think that syphilis was a cause. I am now satisfied that there was never any syphilis in this family, either congenital or acquired, nor any tuberculosis. The father is well at 67. The patient is married and the father of two healthy children. The sister is married and the mother of two healthy children. The brother was recently married, but is physically and mentally strong enough to draw a yearly salary of fifty thousand with a bonus from one of the large automobile companies.

The first case of this sort was described by von Graefe in 1855. In 1880 Eales published a much more extensive description and it often bears his name. Quoting from Foster Moore, "The points upon which Eales laid especial stress were the occurrence of epistaxis, constipation, bradycardia, the pulse rate being habitually below sixty, dyspepsia, headache, lassitude and lack of energy; syphilis is not a cause." This patient was not constipated, did not have nosebleed nor a slow pulse, was of an energetic, athletic type.

Dr. Wm. Zentmayer in a paper read before the New England Ophthalmological Society in 1920 thinks that the "adrenals may be a cause, whether acting independently or in conjunction with tuberculosis." In the discussion of a case of this sort in 1923 he stated his belief that this condition probably has an endocrine origin as ex-

pressed in Boston some years ago and has been accepted by Friedenberg, Wilmer and others.

In 1921 Finnoff read a paper before the American Ophthalmological Society on "Recurrent Hemorrhages into the Retina and Vitreous of Young Persons," reporting five cases of his own and 110 in the literature. He concludes that tuberculosis of the retinal vessels, especially the veins, is one of the common etiologic factors. In the discussion of a paper on the same subject in the following December he says, "I have recently had three cases which I have proven not to be due to tuberculosis."

Dr. Chas. A. Young read a paper before the Academy in 1929 in which he states that he has been able to find 69 additional cases not including three of his own since Dr. Finnoff's paper. He considers that calcium deficiency should be kept in mind as a possible cause.

Ellett, Godwin and others report focal infections as the cause. My patient reported having had toothache for a day and a half. A dentist did not find any pathology. His teeth are rather badly decayed. Two years ago he had them x-rayed and one was removed. He has his tonsils. A competent laryngologist sees no indication for their removal. At that time we did not search for focal infections as we do now.

I have three reasons for reporting this case—first, it is unusual, which is self-evident.

Second, I saw this case before the hemorrhages began. The fundi showed a decided pathologic condition—chorioretinitis. The reported cases were seen after the hemorrhages had taken place. Then when the blood had cleared, the ophthalmoscope usually showed a detachment of the retina or a retinitis proliferans. Achilles Davis reported a case that showed patches of chorioretinitis.

Third, I want to emphasize the treatment with pilocarpine sweats. Dr. Wm. Zentmayer pertinently states, "The treatment resolves itself into an attempt to prevent the recurrence of the hemorrhages and to bring about the absorption of the extravasated blood." It is very difficult to know how to proceed to prevent the hemorrhages when the etiology is so doubtful. These patients, however, should have the advantage of repeated laboratory examinations and careful clinical observation and an effort made to correct any deviation from the normal. In 1906 Dr. G. H. Burnham of Toronto published a little book entitled "The Combined Treatment in Diseases of the Eye," in which in these obscure cases he advocated the prolonged and persistent use of pilocarpine sweats with slight intermissions, together with the internal administration of potassium iodide and mercury. I realize that it is empiric, but I believe pilocarpine sweats are efficacious in stimulating the absorption of these hemorrhages.

DISCUSSION

Dr. Harry Woodruff, Joliet: In this case reported by Dr. Fringer there is a history of several injuries. Whether that removes the case from the category of spontaneous hemorrhage I am not sure, but I think the history of injury should be taken into consideration. It is not unusual to see, after a concussion to the eye followed by hemorrhage into the vitreous or anterior chamber, a number of recurrences after the blood has partly absorbed.

I understand that this patient had a visible lesion in the fundus before he had any known hemorrhage. Could he have had a previous hemorrhage at that time? Some times these hemorrhages may occur without the individual knowing about it. I have a case of retinitis proliferans upon which I could get no exact history as to when the original trouble came about, and I have rather ascribed it to a hemorrhage about which he was unable to give any history. I think the authorities mostly believe tuberculosis to be the most frequent cause. Wilmer at Johns Hopkins Hospital has written quite a little on tuberculosis in these conditions, and if he has nothing else to go on he treats them with tuberculin even though he cannot prove it is the cause. I have done so myself with satisfactory results. Of course I do not prove anything, but I have the results.

I have also had results with autogenous vaccines from the teeth and tonsils. I do not want to stir up any discussion on autogenous vaccines, because I know that certain authorities think there is nothing to them. I believe large doses of calcium lactate is worth while. There are four well proven methods of treatment—antiluetic, though I believe lues is a very infrequent cause. The prevailing opinion at one time was that lues was a very frequent cause of eye disease. We do not now believe it to be the important factor in these cases. I do not believe the hemorrhages you speak of are often due to syphilis. Tuberculosis we have referred to as a frequent cause; calcium deficiency in the blood; and focal infections I am satisfied in older people—though just where the border line lies between young and old it is hard to say—are frequent causes.

Dr. Arthur J. Bedell, Albany, N. Y.: Dr. Fringer can be assured that taking a fundus photograph is not detrimental to his patient.

I was very glad to hear the description of a case that had been observed for such a long time. We might have had more information regarding the condition of the patient, who I am inclined to believe had tuberculosis. If Dr. Fringer could recall the appearance of the fundus when he first saw the case, he might have

seen the typical lesion. I refer to a peculiar translucency which is common in tuberculous choroiditis. It is also very difficult to sharply focus on the individual tubercular lesion. Later when the blood vessels have ruptured, there is a brilliant reflection from the whole area. This sheen seems different from anything else that I have seen.

I tried to listen closely to what was said about pigmentation so as to judge if the patient had a traumatic retino-choroiditis. There is always a migration of pigment in certain parts of the fundus which is characteristic of injury.

If Dr. Fringer had the case today he would treat it differently. I certainly would not use pilocarpin, mercury and iodide but would try tuberculin tests and not stop with one von Pirquet. The fact that the boy was physically strong and healthy has nothing to do with ocular tuberculosis for we find it not uncommonly in those who appear unusually well.

Dr. W. R. Fringer, Rockford: I saw Dr. Bedell smile when I said I was timid about the photograph. I admit, Dr. Bedell, that I was afraid of the photograph. If anything should happen to that eye, to the patient it would have been due to the taking of the photograph.

It was two months, according to the best of my knowledge, from the time of injury until I saw him. There was no evidence in the vitreous or media to show there had ever been a hemorrhage there. I thought it due to syphilis; I never saw anything that made me think it was tuberculous. All the authorities that I came in contact with said tuberculosis was a cause. No one mentioned Eale's disease. He may have been tuberculous. All his family at the present time are in good physical condition. The mother died from primary anemia. He was a strong and muscular boy, not fat but rugged.

I did not know as much about tuberculosis then as I do now, and I do not know much now. I did not know what the etiology was, and I do not know now. The various men who report these cases do so under a very indefinite classification. The boy has a good eye and I hope he will keep it. I am very glad to have had the kindly criticism you have given me.

THE OUTLOOK FOR THE ALLERGIC PATIENT*

SAMUEL J. TAUB, M. D.

CHICAGO

The allergic diseases are seldom in themselves fatal, yet from the standpoint of prolonged suffering and loss of time from work, these ailments assume considerable importance. Particularly is this true of bronchial asthma and hay fever. I shall consider first bronchial asthma.

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Asthma, while not necessarily a fatal disease, is often followed by complications such as bronchiectasis and emphysema which render the prognosis almost hopeless in so far as cure is concerned. Up to twelve or fifteen years ago the hope of cure or relief from the symptoms of asthma were practically nil. In the last fifteen years considerable progress has been made in the knowledge of this disease, especially on the basis of hypersensitiveness. With the use of our present day knowledge of asthma, the majority of patients can be relieved and a large percentage cured. Although the results are still far from perfect, they are certainly gratifying when compared to the results obtained in other chronic diseases, such as heart disease, nephritis, diabetes, tuberculosis and so forth. It is hoped that the future will still further improve our knowledge and results. There are certain factors which make prognosis more favorable, such as the onset of asthma early in life, the finding of a definite cause and early treatment. Unfavorable factors are a late onset in life, particularly after the age of forty, and complications such as chronic bronchitis, bronchiectasis, emphysema and heart disease. Aside from these factors, the outlook for the asthmatic patient depends on the following conditions: 1. A thorough knowledge of the subject of allergy by the physician; 2, a thorough investigation of the patient; 3, the completeness of the treatment, and 4, the cooperation of the patient.

First, a thorough knowledge of the subject of asthma is essential. I do not wish to discuss this in detail here but will merely try to emphasize a few points. The physician should primarily have a good general training and experience in internal medicine. In other words, he must be an able diagnostician. He must, then, have special knowledge pertaining to allergy. In this field there is much to be learned and considerable experience is necessary in evaluating the various substances causing sensitization and where they are found. More than one factor may operate in the causation of an attack of asthma. The constitutional or hereditary factory is usually present first, allowing the patient to become sensitized. The second factor necessary is the presence of the exciting substance, such as dog hair, for instance. The patient may still be free from symptoms until the third factor, the non-specific cause, is pres-

ent. The latter may be thermal, as cold air, infections such as sinus disease, bronchitis, coryza; mechanical, such as nasal polyps and dust and nervous influences.

A thorough investigation of the patient is of the utmost importance. A complete history, particularly of allergy in the family, is important, the character of the attacks and their time and season, the presence of pets in the house, dogs, cats, birds, kinds of pillows and bed covering, mattresses and exposure to various other things in the house as well as the occupation of the patient. The physical examination corroborates the diagnosis of bronchial asthma and we must be careful to rule out such diseases as a chronic nephritis, cardiac disease, tuberculosis and chronic bronchitis.

Asthmatic patients should have routine tests, as complete blood counts, urinalysis, Wassermann and sputum examinations. X-ray of the chest should be done routinely to rule out complications as bronchiectasis and emphysema. Often blood chemistry and basal metabolic rate determinations are necessary. After these preliminary procedures have been done, we are ready for the most important investigations of all, which are the skin tests. There are two methods in use for performing these tests: First, the cutaneous or scratch test which consists of making small linear cuts into the epidermis about one-eighth inch long and one inch apart, care being taken not to cut deep enough to draw blood. The forearms are usually selected for the scratches but the back and thighs may also be used. A Graefe eye knife or any dull scalpel or even a large needle can be used to make the scratches. A small amount of powdered protein is then placed on each scratch with the flat end of a tooth pick and a drop of tenth normal sodium hydroxide is placed on the protein and rubbed in with the sharp end of a tooth pick. It is allowed to dry and after twenty minutes is wiped off with water and the reactions are read. The second method is the intracutaneous or intradermal test which is done by injecting .05 c.c. of the dissolved protein into the skin and raising a small wheal. This method is used when the scratch tests are all negative and in patients suspected of pollen, dust, animal emanations and other miscellaneous sensitizations. Fatal results occasionally occur with the intradermal tests, especially in asthma and hay fever patients who are extremely sensitive, or severe systemic reactions may occur. Therefore, it is not wise to use this method as a routine measure.

A third method which can be used to determine hypersensitivity is that of the passive transfer technic. Blood is withdrawn from the patient and centrifuged at high speed. The serum is injected intradermally in a non-sensitive individual and skin tests are made over these areas. A positive test consists of an urticarial wheal or, at times, an erythema occurring usually within five to thirty minutes. Delayed reactions may occur eight to twelve hours later, particularly in food hypersensitiveness. It requires considerable clinical experience to interpret and evaluate the tests as a guide to treatment. Many times false positive reactions may result which have no bearing on the cause of the attacks. Often a patient will give a negative skin test with substances to which he is actually sensitive. Tests often have to be repeated on account of negative or refractive phases. When tests are completed, clinical trials must be made and the value of the test confirmed. In some cases we have to resort to conjunctival and intranasal tests. About 250 of these proteins, exclusive of pollens, are available for testing each case of allergic disease.

In a previous communication I reported an asthma caused by canary feather protein and several cases of eczema caused by silk. These cases emphasize the importance of making a sufficient number of tests on each patient and not just testing for the more common substances. By multiple sensitization we mean sensitization to any two or more unrelated substances. Patients who react to timothy pollen usually react to other members of the graminae group, as red top grass, June grass, orchard grass and so forth. Likewise, patients reacting to the pollen of ragweed will usually also react to other members of the compositae, as giant ragweed, sunflower, cockle burr, and so forth. Brown calls these "group reactions" and they are due to a similarity in the structure of the protein molecule. A person may be sensitive to some protein, such as a food with which he comes in frequent contact and yet remains free from symtoms. Peshkin and Rost and Rackemann have found that about ten per cent. of children without symptoms of allergy are sensitive to one protein or another. They are allergic but in

equilibrium and the terminology "balanced allergic state" has been advanced by Vaughan. The tissues are able to handle a given amount of the allergen without upsetting the allergic balance. Desensitization from eating small amounts may be a factor. An overdose of allergen will upset the equilibrium with onset of symptoms. Hay fever, asthma, urticaria and eczema cases frequently show multiple sensitiveness.

Complete treatment is of great importance. We can be of considerable help in the preventive treatment. Since about 30 per cent. of hay fever patients develop asthma and since pollen treatment is very effective in the prevention of pollen asthma, the prophylaxis of many asthma cases is apparent. Eczema and bronchitis in childhood frequently terminate in asthma and can be prevented if diagnosed and treated early. In the presence of a history of a hereditary tendency to allergy, exposure to dogs, cats, horses and feathers should be avoided. Palliative treatment is used while the investigation is in progress and where other methods fail. Adrenalin 1:1000 from 5 to 15 minims is the drug of choice in relieving an asthmatic attack. The dose must be adjusted to the individual and the severity of the attack. Pituitrin in 5 to 15 minim dosage may be combined with the adrenalin and a more prolonged action seems to be obtained. Ephedrin has the advantage in that it can be given orally and the effect is more prolonged but its action is not as certain. For the best effects it should be given before the attack is expected, especially if it occurs regularly during certain times of the day or very early in the attack. Other drugs which are useful are apomorphine hydrochloride, iodides, lobelia and belladonna. At times morphine and atrophine have to be resorted to and I know of no contra-indication to their use, especially in the severe asthmatic state when adrenalin fails to relieve the asthma.

Specific treatment consists of removing the offending substance from the patient's environment or desensitization. The elimination of the offending agent is the method of choice where possible. This means the removal of feather pillows, mattresses, cats, dogs, birds or the elimination of certain foods or whatever the offending substance may be. In pollen sensitiveness, horse dander, house dust, orris root or eggs, wheat or milk sensitiveness, desensitization treatment is necessary. This consists of hypodermic injections of minute doses of the offending substance and increasing the dose until the patient's tolerance is raised to the point where the substance can be tolerated clinically without causing symptoms. As Thiberge so aptly states, a desensitization course is prolonged and it certainly cannot be permanently accomplished through only a dozen treatments. Non-specific treatment is to be used when the skin tests have all been negative or when specific treatment has failed to produce results. Vaccine therapy is the most important in this group of cases. Stock vaccines obtained from groups of asthma patients during the same season give better results than autogenous vaccines. In certain selected cases, x-ray therapy is of benefit. Infections of the nose and throat should be cleared up but operative procedures should be avoided whenever possible as it tends to aggravate the asthma. Nasal operations are far too commonly done in asthmatics and allergic rhinitis.

Other non-specific treatment includes Quartz lamp irradiations which are highly beneficial, tuberculin treatment as advocated by von Leuween and non-specific protein therapy.

Finally it is vital to obtain the patient's full cooperation. This can be best obtained by education, detailed explanation and the furnishing of a booklet of instructions to each patient. The allergist must possess confidence and perseverance himself to be enabled to inspire his patient with a like confidence.

The outlook for the allergic patient is remarkably hopeful if a regime such as I have tried to outline is carried out.

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DISCUSSION

Dr. E. E. Edmondson (Carbondale): I wish to compliment Dr. Taub for his excellent paper on so important a subject, and to thank him for bringing out clearly the salient points of etiology, diagnosis, treatment, and cooperation on the part of the patient. The suggestions Dr. Taub has made in reference to the necessity of instructing the patient thoroughly as to the course of treatment and insistence on faithful observance of professional directions and to habits, diet, and other care of the case are most important.

I most thoroughly agree with Dr. Taub on the rapid advances which have been made in recent years in the therapy of hay fever and hay asthma, as well as other types of allergic disorder. And I am reminded of a well-trained lawyer in my territory who suffers from the seasonal type of nasal allergy, who, when recommended to consult me, informed his solicitor that he had consulted competent authority several years ago and had been informed that nothing could be done to effect relief in his case and he was now following that advice. That may have been sound advice in legal principles which are not supposed to change, but in a science which is progressive and at certain points makes revolutionary changes in therapy and thereby great advances are effected in therapeutics to the great comfort of otherwise hopeless conditions, the principle of not seeking further relief is faulty, and much unnecessary suffering may be endured.

In a paper read before the Association for the Study of Allergy last year at Detroit, I brought out the fact that many afebrile nasal colds were of an allergic nature, and if attended to by the proper treatment early, an immunity might be established which would prevent a repetition of such symptoms and establish the patient on the positive side of the allergic balance. Being on the positive side of health balance means that the organism is able to overcome and disregard the environment so far as the tendency to manifest symptoms is involved.

That means that the body is able to resist disease tendencies, and it is equally true in allergy; those processes by which the body is enabled to overcome the allergens and show no symptoms are the processes which should be encouraged. In hay fever and hay asthma we are learning more and more of the disease atria and are locating these in the upper respiratory tract, and by increasing the resistance of the upper portion of the respiratory system we are enabled to overcome greater doses of allergens which may assail the patient.

In the territory in which I am doing this research we have a much heavier pollution of the atmosphere by pollens than exists in New York or Chicago, but by the methods of strengthening the resistance of the nasopharyngeal area we are eliminating the necessity of administering large doses of antibodies that might produce anaphylaxis or cause a fatality as not only cited by the Doctor but as reported by many other men using the same means. In the more recent studies of allergies affecting the respiratory tract, we are having some very excellent results by attacking the disability in its stronghold, the nasal cavity itself. This increases our percentage of restoration to normal and also eliminates anaphylaxis.

I find myself in perfect agreement with Dr. Taub in the matter of nasal surgery in allergic conditions. We should not operate in an area of lowered resistance, at least until that resistance has been increased to normal. Another point on which there is compelte agreement among the informed men is that of the futility of injecting either the nasal nerve or the sphenopalatine ganglion for the relief of the symptoms of the upper respiratory tract; it allows the absorption of allergens to go on without sensory protest, and if the injections are successful in destroying the nerve structures, it renders the nasal organ a completely numbed area which is most disappointing to the patient.

Treatment of the complications of sinusitis and the infections of the naso-pharynx is materially aided by the intramuscular use of protolac (milk) and manganese butyrate cautiously administered. This latter drug often is of much value in asthmatic conditions.

It has been said often and correctly that once luetic always luetic, once a tuberculous case always so, once a malignancy always such danger; and it is equally true that once an allergic case always the tendency or possibility of recurrence, but with modern methods now at hand there is no need to remain on the negative side of the balance—no need to be a dodger of seasonal influences. The better plan appeals to many men—that of building the resistanec of the patient by intelligent therapy to the point where he is enabled to overcome and disregard his environment.

Dr. J. F. Hultgen (Chicago): I have been very much interested for a number of years in allergy. I think this new baby in medicine is a very welcome addition.

A few words in regard to many of these conditions which we cannot classify or diagnose, such as would come under the head of erythema and urticaria and some forms of eczema. I have used thio-bismal intravenously with very good results. I have no idea about the mechanism thereof, but I have been struck with the frequency of the effects on pruritis in many of these cases. I do not know whether it was the sulphur factor or whether it was the bismuth. In fact, there is a notorious shortcoming in our knowledge concerning those diseases, such as purpuric affection or purpura mixed with urticaria or erythema. I would like to say that I found intravenous injection—slow injections—of thio-bismol very beneficial in quite a few cases.

I congratulate Chicago as being the seat of the Allergic Society, and I think it is a distinct need in medicine.

Dr. Samuel J. Taub (Chicago): I wish to thank Dr. Edmondson and Dr. Hultgen for their discussions. I should just like to quote a few figures from the Allergic Clinic at Northwestern University and private cases. There were 400 asthma patients studied; 280, or 70 per cent., were found definitely allergic to some substance—food or some inhalant material with which

they were coming in contact, such as dust, cotton, wool, silk, or various substances of that kind—120 of these, or 30 per cent., were found non-allergic according to our tests. Of this group of 120, sixty of these patients showed sinus infections in the ethmoid or the antrum. All of our cases are routinely examined in the Nose and Throat Department. At the present time they are using quite a little lipiodol injections in the antral and ethmoidal cases and more have been diagnosed with this method. Of the remaining sixty patients who had no antral infections or no ethmoidal infections, we found some considerable percentage had a bronchiectasis, some had evidence of a chronic pneumonitis showing adhesions to the diaphragm, and some had delayed resolution following pneumonia. There were some cases of emphysema. There is also quite a group of cases—thirty in all—that showed combined sinus infections plus lung pathology, and these cases have probably been reinfected by the chronic sinus pathology. As Dr. Edmondson pointed out, it is very important that these ethmoidal and sinus conditions should be treated conservatively, not by operative methods but by antral washings and probably some local packings.

Regarding Dr. Hultgen's question of the urticarias, angioneurotic edemas and the eczemas, a large percentage of urticarias are due to foods and the pathogenesis is the same in urticaria and in many eczemas as in asthma. The absorption of the protein through the digestive tract enters the circulation, and the lung in the asthmatic is the vulnerable tissue. If it is the skin, you get the eczema or the urticaria or angioneurotic edema. We found foods to be the cause of a large number of our urticarias and eczemas.

Where we do not get a definite skin test, we try the diet elimination that Rowe has brought out; by eliminating various groups and food groups, we have been able to find quite a few of the causes of these urticarias.

I have had no experience with using bismuth intravenously; but I would say that in some urticarias you do find low blood calcium, and if we use calcium, gluconate particularly, intravenously, we get some good results.

ROENTGEN DIAGNOSIS OF BRONCHIECTASIS*

ADOLPH HARTUNG, M. D.
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Bronchiectasis is a comparatively common disease but many instances of it are not recognized and are regarded as cases of chronic bronchitis, asthma, pulmonary tuberculosis, or other pulmonary disease. Advanced cases with profuse foul expectoration are readily diagnosed clinically and these usually present familiar and characteristic roentgen findings. Early cases, however, are frequently overlooked by both clinician and roentgenologist because the findings are less evident and well known. It is precisely these cases which require diagnosis so they may receive the benefit of conservative treatment and thus prevent the occurrence of the late stages which offer a rather hopeless prognosis. This paper is intended primarily to call attention to some of the earlier or atypical roentgen manifestations of the disease.

Certain fundamental considerations may well serve as an introduction to the subject. The futility of purely objective interpretations of roentgen findings is probably best exemplified in examinations of the lungs where many different conditions may produce almost identical images. If the roentgenologist is to fulfill his real mission of helping the clinician solve his diagnostic problems he must have not only a thorough knowledge of disease but be able to interpret his findings in terms of disease. This applies with special force to bronchiectasis. Many of the roentgen findings in this condition are of an equivocal nature and acquire special significance only if considered in conjunction with the history, clinical and laboratory findings. Without such coordination, the roentgen diagnosis is merely a question of possibilities or suspicions—with it, it becomes a matter of probabilities or certainties.

The pathogenesis of bronchiectasis is not definitely known. Some of the more plausible theories advanced are 1. injury of the bronchial wall, 2. prolonged obstruction of a bronchus, and 3. sclerotic contraction of the parenchyma. One or more of these factors are usually associated with the antecedent or exciting causes which include in the order of their frequency the pneumonias, recurring bronchitis, the infectious diseases of childhood, aspirated foreign bodies, chronic pulmonary abscess, and chronic fibroid phthisis. The condition may also occur as a congenital lesion. Atelectasis from any cause persisting for any length of time is invariably associated with dilatation of the bronchi.

A brief consideration of some of the gross pathologic changes may serve to emphasize what the roentgen examination may be expected to disclose. Dilated bronchi with their attenuated walls are not visible on the roentgenogram any more than are normal ones. The coincident infection which invariably accompanies the process when it has reached the stage of clinical signifi-

*Read before the Section on Radiology of the Illinois State Medical Society, May 7, 1931, at East St. Louis.

cance produces a fibrosis or interstitial pneumonia which accounts for the increase of linear markings commonly present. The dilatations assume various shapes and dimensions but the plain films rarely give any indications of what these may be. Their contents are responsible for the irregular increased densities seen roentgenographically and as these contents vary considerably even within short intervals in connection with expectoration, the pictures presented at different times are apt to vary even in the same individual. Associated or residual changes of the condition primarily responsible for the bronchiectasis may dominate the findings so that the presence of a bronchiectasis may be obscured or entirely masked.

The roentgen findings depend upon the location of the lesions, their extent and stage of development, and the nature of the process responsible for them. Where the changes are limited to parts of the lung below the domes of the diaphragms or behind the heart, ordinary roentgenograms may show practically no evidence of the disease. If the changes are marked, they may show through on dense negatives. Lesions behind the heart are frequently associated with cardiac displacement due to sclerosis or atelectatic changes. In a series of cases studied this was noted in over one-third of them and in about one-fifth of these it was the only demonstrable change. Where no obvious cause for displacement of the heart shadow is evident, this finding should suggest a possible bronchiectasis.

Increase of linear markings, especially into the lower lobes, is by far the most common finding, but it is also the least reliable one. It was present to some extent in almost half of the cases examined and its importance was found to vary in direct proportion to the degree of increase. Inasmuch as there is no established normal of linear markings, evaluation of this finding is largely a matter of individual judgment. Furthermore, it cannot be definitely differentiated from an interstitial fibrosis from other causes except possibly for its predilection for the lower lobes. At most, the finding from a purely roentgenologic standpoint can be regarded merely as suspicious in the majority of cases.

When this increase of linear markings is associated with irregular densities, the probability of its being due to a bronchiectasis is greatly increased. These densities frequently obscure the heart outlines and also the domes of the diaphragms and may be scattered through the parenchyma of the lung. In advanced cases they produce a honeycomb appearance, which is almost pathognomonic.

When the roentgen examination discloses an atelectasis or consolidation which has been present for a considerable time, the presence of a bronchiectasis may be inferred. Densities of this kind may be uniform and sharply outlined and hardly to be differentiated from an encysted fluid accumulation. Sometimes indefinite radiolucent areas are present within the density, suggesting a bronchiectasis. In all of these conditions as well as in connection with chronic lung abscess, the use of iodized oil injections is necessary to demonstrate the dilated bronchi. Cases of chronic fibroid phthisis associated with bronchiectasis as a rule also show no distinctive findings to indicate an associated bronchiectasis but several cases seen presented a peculiar fibrotic network which was very suggestive and subsequently confirmed with the aid of iodized oil.

A localized bronchiectasis of either the atalectatic or other variety should suggest a foreign body origin and a special study ought to be made of it with that in view, including a bronchoscopic examination. This was beautifully illustrated by a case demonstrated by Dr. Manges in a recent lecture where the bronchoscopic examination revealed a blade of grass. Some of these cases in infants where no definite history is obtainable are supposed to be cases of pneumonia and the bronchiectasis is a secondary change.

The use of iodized oil injections has rendered the diagnosis of bronchiectasis certain as to its presence and accurate as to location, extent and nature. It has been especially valuable where clinical signs pointed to the disease but the roentgen examination was doubtful or negative. However, even in cases where the roentgen findings were positive, it has shown that the extent or location of the disease was not always limited to the area of demonstrated changes but frequently was far more extensive than the findings seemed to indicate. As has been mentioned, it makes it possible to detect the condition in atelectatic or consolidated lung tissue and in association with chronic lung abscess or fibroid

phthisis. With it the nature and size of the dilatations may be shown.

In our experience in connection with iodized oil injectons, pure saccular dilatations have been found to be extremely rare. Most of the cases present cylindrical expansions of the lumen of the bronchi of variable degree and many of these also have ampullar dilatations or cul-de-sacs associated with them. A common finding is an abrupt stoppage of the oil before it reaches the smaller bronchioles, probably due to secretions distal to it. This is in marked contrast to normal cases where the oil penetrates to the terminal structures. Dilatations in consolidated or atelectatic lung tissue usually assume irregular or atypical shapes. In chronic fibroid phthisis a peculiar nodular type has been demonstrated which has not been found in other cases and which therefore may suggest the origin of the process.

The chief conditions from which bronchiectasis must be differentiated are chronic bronchitis and pulmonary tuberculosis. In the case of the former, iodized oil injections show no dilatations of the bronchi. Only in exceptional cases is it necessary to resort to bronchography in connection with pulmonary tuberculosis, for clinical and laboratory findings usually are distinctive and the roentgen examination as a rule presents an entirely different picture. Rarely a large bronchiectatic cavity closely resembles a pulmonary abscess. In these cases, iodized oil injections are of value for, whereas the oil readily enters the former, it seldom does the latter. Cases of bronchial fistula with empyema also can be easily differentiated by bronchography. Often iodized oil injections are used in connection with known pathological processes to determine whether a complicating bronchiectasis is present which might account for some of the symptoms present.

Statistics based on an intensive study of 92 cases of bronchiectasis previously published, have shown that the findings on plain roentgenograms as far as could be determined, gave a correct diagnosis both as to the presence and location of the lesion in only 20 cases. In 17, the findings were suspicious. In 16 bilateral cases it was possible to make a positive diagnosis on one side while on the other, the findings were so slight or atypical, that no diagnosis, or merely one of "suspicious for bronchiectasis" could be made. In 39 cases it was impossible to make a diagnosis. The reasons for the inability to make a correct diagnosis both as to the presence and location of the lesion were as follows: No abnormal findings, 11 cases; no abnormal findings on one side, 12 cases; lesions obscured by heart, 17 cases; lesions obscured by diaphragm, 5 cases; lesions obscured by fibrosis, 21 cases; lesions obscured by fluid in pleural cavity, 1 case.

Cases presenting findings similar to some of those which passed unrecognized at the time of making this study are less apt to be overlooked in the light of the knowledge acquired. The results of this study and subsequent experience seem to justify the following conclusions:

1. In about 60 per cent. of all cases a diagnosis of bronchiectasis can be made from a study of the plain films.

2. In the majority of the remaining cases, such an examination will reveal findings of a nature to indicate the probable presence of bronchiectasis or the desirability for further investigation by bronchography.

3. Diagnostic bronchography with iodized oil is absolutely essential for obtaining accurate information relative to the nature, location and extent of bronchiectatic dilatations.

DISCUSSION

Dr. Gerald M. Cline, Bloomington: Dr. Hartung's paper again emphasizes the value of x-ray in pediatrics for most of his cases of bronchiectasis were in children. His use of iodized oil as a diagnostic aid was particularly valuable and interesting.

Dr. George M. Landau, Chicago: It is unfortunate indeed that the facilities do not permit the showing of Dr. Hartung's slides along with his splendid paper.

Dr. Harold Swanberg, Quincy: I wish Dr. Hartung would state briefly the technique he is now using for the administration of iodized oil.

Dr. Adolph Hartung, Chicago: We use the intratracheal method in the administration of the iodized oil, and it is extremely simple. It can be done even with children without any preliminary preparation, and can be made an office procedure. Preliminary cleansing is followed by inserting the needle in the inter cricothyroid space, after filling the syringe with warm oil and then injecting it. It takes only a very few minutes, but the individual should be cautioned to refrain from coughing as much as possible. Coughing tends to spread the oil in a manner to obscure the pathology.

I am sorry I could not show the slides because they would have brought out the various conditions I mentioned. Practically all of our cases occurring in older individuals show the cylindrical type of dilatation up in the region of the hilum and behind the heart. The greatest help we have gotten is in children. Where we

find cases in which there has been a chronic productive cough for years, the bronchi show very definite dilatations. One thing I should like to stress in regard to localized bronchial dilatations in children is that some of them are due to aspirated foreign bodies which subsequently leave bronchiectatic changes.

THE TREATMENT OF GASTROENTERIC INTOXICATION IN INFANTS*

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In practice, ordinarily, the diarrheas of infancy, which occur mostly in the summer months, are divided into two groups; namely, 1. fermentative diarrhea and 2. infectious diarrhea. The first is also called dyspeptic diarrhea, milk poisoning, and in its severe form, cholera infantum. The latter group is called inflammatory diarrhea, enterocolitis, ileocolitis, dysentery, etc. The practitioner is unable at the onset to differentiate between the groups. Both may begin with similar symptoms. In both there is a diminished digestive capacity and an increased fermentation in the small intestine. We speak of the former as a functional disturbance, and the latter as an infection of the mucosa. In the first form there is an excessive bacterial activity in the intestinal contents due to some functional disturbance; in the latter, a penetration of the intestinal mucosa has been accomplished by certain pathogenic bacteria and a consequent inflammatory reaction has taken place. We recognize the difference, clinically by the presence of inflammatory products in the stool; namely pus. The mucopurulent discharge from the bowel may be visible to the naked eye, but often we must depend on a microscopical examination. A drop of liquid stool which under the microscope shows hundreds of cells in each field is clear evidence of the infectious or inflammatory nature of the process.

The differentiation of the kind of diarrhea is important, but the practitioner is especially interested in another division; namely, 1. a simple diarrhea without toxic symptoms, and 2. a diarrhea with toxic symptoms. The former presents no difficulty in treatment. A laxative, several hours starvation, a plentiful supply of water, and the administration of bismuth, with or without opium, results in a rapid convalescence. Most of these cases are probably functional disturbances, but many depend on milk infections of isolated portions of the intestine.

A difficult problem is presented when the diarrhea is accompanied by toxic symptoms. Then the prognosis becomes questionable and the treatment extremely important. We distinguish between several forms of these general symptoms.

A. Hyperprexia. This depends on several factors, such as absorption of toxic products, water loss and a high terrestrial temperature. It is best combated by hydrotherapy.

B. Convulsions. This also varies as to the cause. It may depend on the height of the fever, the condition of the nervous system (as in calcium deficiency) or a pure, bacterial toxicosis, as in dysentery. We use chloroform or ether to subdue the convulsive tendency if the ordinary warm bath fails. Occasionally, I resort to a hypodermatic injection of morphine. The injection of magnesium hydrate has proven dangerous in my hands in these cases. Chloral hydrate or barbital may be prescribed in persistent cases. If a calcium deficiency is present, calcium chloride may be very effective.

C. Gastroenteric intoxication. The principal danger in all severe diarrheas is the peculiar syndrome, called gastroenteric intoxication; or in Finkelstein's terminology, alimentary intoxication. Briefly the symptoms are drowsiness, stupor, and indifference to the surroundings, ashen color of the skin, sunken eyes, deep breathing, slowing of the pulse, anuria, and finally the appearance of an inelastic skin and subcutaneous tissue. The temperature is only slightly elevated as a rule. These symptoms are superimposed on a moderate or severe diarrhea. What is the nature of this intoxication?

Before the publication of Finkelstein's critical studies, it was generally assumed that the intoxication was caused by bacterial products of decomposition in the intestine, but this author pointed out that no toxic substance could be found. Finkelstein believed at first that febrile disturbance and intoxication depended on the same cause; a disturbance in the intermediary metabolism brought on by the excessive absorption of sugar and whey. Later it was found that salts may cause a fever, also the excessive ingestion of protein may produce a marked elevation in temperature, but the febrile movements produced by these substances are not the same as

*Read before the Madison County Medical Society, May, 1931.

the intoxication. At least, that is the conclusion of the independent observers. The next attempt to determine the cause of intoxication was a study of the acid base equilibrium by various American workers; and for several years the clinician assumed that gastroenteric intoxication was synonymous with acidosis. The mistake is easily made, since so many cases of intoxication show a marked hypernea. It is now believed that either an acidosis or alkalosis may be present in intoxication; although the loss of alkali, the loss of water and elevation of temperature can be induced by certain toxins without any appreciable change in the acid base ratio.

Of great practical importance was the recognition that the rapid loss in weight and the inelastic skin depended on a loss in water. Thus arose the term dehydration. The intoxication was assumed to be one of dehydration. This theory was championed especially by some American writers. The term anhydremia was proposed as a substitute for intoxication. I myself, became very hopeful that the actual cause has been discovered; but in 1926 we had a severe epidemic of summer diarrhea, the infectious type mostly. I adopted the anhydremia theory in practice. The babies were given plenty of water, by the stomach, under the skin (we use Ringer's solution) and even intraperitoneally. There was a temporary improvement, but out of 20 cases only five recovered. I observed, then, that the babies under this treatment passed plenty of water by the urinary tract, but the tissues remained inelastic. The conclusion was obvious, the tissue could not hold water because the cells were sick. We have discontinued the practice of over dosing the baby with water, you can do much harm this way.

The theory of dehydration is much over-emphasized in the treatment of acute disease. A plentiful supply of fluids in the hot weather is necessary, but every effort should be made to give it by the mouth and not in the tissues nor abdominal cavity. Only when it is impossible to administer water by the mouth, as in pyloric stenosis or protracted vomiting, is it necessary to give it in the tissues. Pure water by the stomach is better than any salt solution yet devised given hypodermatically.

For several years in Germany and Holland other important researches have been undertaken which are gradually modifying the clinician's view of the subject. Plantenga, a Dutch pediatrician, was among the first to prove that a powerful toxin is present in a bouillon culture of the colon bacillus. He experimented with calves, and he succeeded in producing the symptoms of alimentary intoxication by injection of this culture. In some later studies (Yahr. f. Kinderkr. Nov., 1930) he demonstrated that neither the filtrate nor the washed colon bacillus could produce the symptoms, but it takes the combination. The fluid of the culture acts in the same sense as an aggressin; that is, paralyzes the leucocytes so that the endotoxin of the colon bacillus becomes effective.

Bessau and others demonstrated that the colon bacillus is present in enormous numbers in the upper ileum in these cases, a portion of the intestine which is comparatively sterile in healthy infanta. Meanwhile studies have been made on the toxicity of the aminoacids and their absorption from the diseased alimentary canal (Rosenbloom, Monalseter Kinderl., June, 1930), without any positive results except that histamin has been shown to be very toxic. The study of the intermediary metabolism in experimentally produced intoxication in animals has revealed nothing definite. (Berger and Rosenbloom, Monalseter. f. Kinderl., July, 1930.)

A very interesting clinical study was made by Scheer and Abraham (Jahr. f. Kinderh., December, 1930). Scheer had previously discovered that in the severe forms of intestinal indigestion colon bacilli are found in the duodenum and further observed that these colon bacilli had pathogenic qualities. There are, therefore, harmless and pathogenic colon bacilli. Scheer obtained these virulent colon bacilli from an infant suffering from intoxication. From these was prepared a sensitized colivaccine. He used this vaccine for 14 cases of gastroenteric intoxication and all recovered promptly without any marked change in diet except a plentiful water supply and a reduced quantity of the regular food. Every second day he injected the vaccine subcutaneously beginning with 20 million and increasing to 80 million. Two injections usually sufficed. I know of no other clinical results that approached this success.

The theory that an acute otitis and a mastoid infection is a common cause of severe diarrhea

and intoxication has been offered, but Allan Brown of Toronto (South. Med. Jr., Feb., 1930) has pretty thoroughly upset this theory. While otitis media and even mastoid infections are a common complication in diarrheal diseases in hospitals, it is by far less common in the home. I have watched many of these cases and examined the ears carefully and in a small percentage an inflammatory condition of the membrane tympani was present, but this seemed to be a later manifestation, and generally subsided spontaneously without paracentesis of the drum membrane. The theory of parenteral infection as a cause of serious diarrhea is much overrated in my estimation.

We must come back to the old theory—gastroenteric disturbance. It is not merely a metabolic disturbance, it is an actual poisoning of the body by putrefactive products formed in the upper part of the small intestine where absorption is most active. The symptoms arise especially in inflammatory enteritis when there is an actual infection of the mucosa by some form of the dysentery bacillus or a virulent colon bacillus. Occasionally in the young baby it may arise in a dyspeptic diarrhea, or even in an allergic enteritis. Hot weather favors this intoxication by diminishing the intestinal secretions and by the excessive water loss from the skin; but hot weather alone is not sufficient.

Keep the baby cool and give plenty of water during the hot weather. Do not give milk which may be contaminated by pathogenic germs. All milk and cream for the baby should be boiled during the summer. When a diarrheal condition ensues, stop the milk and give only barley water or rice water sweetened with sugar or syrup. If the symptoms of gastroenteric intoxication are present the following is suggested: Keep the baby cool and give the baby frequent tepid baths. Quiet the stomach with some medicinal antemetic such as phenol, lime water, magma magnesia, peppermint water, soda, etc. Then give plenty of sweetened rice water or barley water. Very definite directions as to quantity must be given: about one quart daily. This is 4 ounces every three hours, or 3 ounces every 2 hours. Instead of barley water you may give Ringer's solution diluted with water one-half, and add 5 or 6 per cent. sugar or syrup as suggested by Vollmer. Do not attempt to check the diarrhea with drugs. The rectum can be washed out 2 or 3 times a day with normal salt solution. The baby must be kept on this for two or three days until all toxic symptoms have disappeared. If the symptoms of starvation appear, a blood transfusion must be resorted to, or some human serum can be given subcutaneously, or intramuscularly. This may have to be repeated, but do not expect too much from a blood transfusion. Subcutaneous injections of salt solution or Ringer's solution or Hartman's solution should be used only when the clinical signs of dehydration persist. Intraperitonal injections should be used only in extreme cases, when all the tissues are dry and the fluid is not retained by the stomach. The return to protein food must be made very slowly, a little buttermilk or casec can be added to the cereal decoctions. A small quantity of human milk, when obtainable, may be used in the same way.

It must be remembered that human milk is easily fermentable and may rapidly balloon up the intestine. On the second day of the treatment a vitamine substance must be added. We give some orange juice, gradually increased. A clear vegetable soup to furnish vitamin B is given on the third day. The cereal decoction should be thickened and a small quantity of milk protein added. Scraped apple and banana are excellent additions.

The prognosis depends in most cases on the extent of intestinal disease. The higher in the intestine that the inflammatory process exists the graver the prognosis. Even when severe toxic symptoms have abated, the question of nutrition is paramount. Do not starve the patient too long. The principal therapeutic effort should be to nourish the patient, give the cereal decoctions with the addition of vitamin substance; also egg puddings, and gelatin preparations must be tried. Older children are encouraged to chew on bread, crackers or bananas. The blood volume shrinks so much that intestine has not enough blood supply to begin digestion. A small blood transfusion often starts the nutrition.

I can not refrain from expressing the hope that a specific antitoxic serum for this disease may soon be discovered. Perhaps a sensitized vaccine may answer our purpose. The recent report of Scheer is very encouraging. Attention is hereby called to the apple diet which is receiving so much attention in Europe. Scraped

apple is to be preferred. Some enthusiastic supporters are found among the pediatricians of Europe. Of course, the usual drug treatment has to be used in many cases. In persistent diarrheas the tannic acid compounds as acetyltannic acid are very helpful.

536 N. Taylor.

POSTOPERATIVE MANAGEMENT OF ABDOMINAL OPERATIONS*

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In presenting a paper attempting to discuss the entire scope of this subject, it is necessary to eliminate lengthy, detailed description of individual procedures. Consequently, in this paper I shall outline our usual method of handling a large surgical service with a discussion of some of the individual problems that arise during complications.

In the past there has been little or no importance attached to postoperative care, and it is only in the last two or three years that any writing of consequence has been done on this subject. Now it is extremely gratifying to see the wealth of literature that is being produced on this important phase of surgery.

When this attitude of indifference is entertained by the surgeon, the posteroperative care is almost entirely relegated to the internes and nurses. The consequence is that the patients suffer from the inexperience of these attendants. A little time and care spent on postoperative treatment is unquestionably a good investment and will soon show a decrease in morbidity as well as mortality. It may seem surprising, but the man of only average operative ability, who gives his patients thoughtful after-care, will have results as good, or better than the brilliant surgeon who is too busy to look after his patients properly.

In bringing before you an outline of our procedures, I will first call to your attention the widely discussed subject of the choice of, and use of sedatives. Morphine sulphate, hypodermically administered, is used by most men, but there is a wide variation in dosage and frequency of administration. It is our belief that morphine should be used in quantities sufficient to keep the patient from acute pain and to prevent restlessness. Morphine sulphate gr. 1/6 every six hours for the first day, or even gr. ¼ every six or eight hours regularly for 24 hours has proved much more satisfactory than the usual ¼ gr. Prn. to be given as the nurse's judgment dictates, or which is more frequently the case, at her convenience. When morphine has been given regularly the first 24 hours after operation, it is unusual to require any narcotic during the second day, but a patient is always entitled to the consideration of morphine the second evening and even on the third evening, occasionally. There will be men to criticize so much morphine as being unnecessary and habit forming. However, it has been shown by experience, and by recent extensive writings in the Journal A. M. A. by Fishbein, Hollaway, Culter and others that drug addiction arising from morphine after the ordinary abdominal operation, is rare. As for the necessity, it is our belief that the patient is much better off from the quiet stupor of morphine than the restless, exquisitely painful, nightmare that follows an operation without sufficient narcotic. A set routine for morphine cannot be given to apply to all kinds of operations and all sizes of patients, and so the surgeon's judgment is called upon to individualize each case. It is our plea that morphine be used in sufficient quantities during the first 24 or 48 hours to produce a definite narcotic effect, whether this amount be small or large, depending on the patient's tolerance to this drug. For restlessness, discomfort or pain after 48 hours, the surgeon may resort to codeine by mouth, phenolbarbital, allonal, amytal, acetosalicyclic acid, amidopyrene or any of the other myriad of sedatives that the individual case, or his fancy may dictate.

The second measure to bring to your attention is the need of adequate amounts of fluids. I feel free to say that all of you use proctoclysis on selected cases. In our service, continuous proctocylsis of normal saline is used routinely, except in operations on the colon and in certain cases of ruptured, gangrenous appendicitis. The appendectomy for the frequently found acute appendicitis is considered not to be a contraindication to the use of proctoclysis. Hypodermoclysis is used immediately after operations

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From the service of Dr. Geo. H. Schroeder, Lutheran Deaconess Hospital

on all cases in which proctoclysis cannot safely be used, and in addition to proctoclysis in gastric resections, gastric or small bowel anaestomoses, and in all cases of extensive operations where shock is present or is imminent. In our experience normal saline is the fluid of choice in hypodermoclysis as well as proctoclysis. Glucose in varying amounts is used for intravenous administration. Intravenous use of glucose is desirable and highly beneficial in cases of shock, in cases of low resistance, and in gastric work where carbohydrates cannot be given orally for some time. The usual amount of glucose given to the average adult patient is 50 grams in 20-25 per cent. solution. The concentrated solution given slowly, has been found to put less strain on the heart than does a larger volume of a more dilute solution. There has been a number of articles recently advocating the use of the continuous drip method for intravenous glucose. J. Shelton Horsley in a paper before the Indian State Society in 1929, recommends and condones this method, and a recent paper by Hyman and Hirshfeld in the Journal A. M. A. speaks highly of this procedure also. In the first place, the vast amount of equipment necessary for 30 or 40 patients is prohibitive, and it is our opinion that leaving these canulae in place for several hours or even days without attention is fraught with definite danger. Because of these reasons, our cases are given glucose by the gravity method through a closed system. With the exception of whole or citrated blood, glucose solution is the only fluid used for intravenous administration.

The third measure that is used almost universally is the enema. There are many kinds of enemas, but they all have common purposes, namely to relieve the patient of gas, to prevent a paralytic ileus, to produce evacuation, and occasionally to provide nourishment. It is usually unnecessary to use enemas before 48 hours, but it is perfectly safe to use normal saline or tap water as early as 36 or even 24 hours. The reason for the use of tap water or normal saline in the early enemas is that these solutions go only as high as the quantity of fluid and the pressure will permit. On the contrary, soap suds or medicated enemas, even in small quantities, travel beyond the ileo-cecal valve into the small intestine. The 1-2-3 or 2-4-6, glycerine, magnesium sulphate and water enema is probably the most efficacious in relieving distention and can be given safely after 48 hours, with the exceptions already mentioned as contra-indication for proctoclysis. Soap suds or petrolagar enemas are used throughout the convalescence to effect evacuation in preference to cathartics. The 5 per cent. glucose with 2-3 per cent, sodium bicarbonate enema may be used when nutriment is desired, but is of questionable value. The old famous milk and molasses enema still has an occasional use in early peritonitis or paralytic ileus. For the patient who is in distress from too vigorous administration of rectal fluids, or from too frequent use of enemas, 4-6 ounces of warm olive oil as a retention enema is a great boon.

We have outlined our procedures in using the so-called routine measures, and so come to the less common means that are suggested for various complications. The gastric lavage is an extremely valuable measure that has definite use in cases of dilatation of the stomach and intestinal obstruction. In cases of persistent nausea and vomiting after any operation, the patient is markedly relieved by a gastric lavage with a 5-10 per cent. sodium bicarbonate solution. Particularly after gallbladder work, much distress from vomiting can be obviated by the use of the stomach tube. In the rather uncommon misfortune, namely, acute dilatation of the stomach, it is absolutely necessary that the patient have frequent lavages. In these cases it is our practice to use this procedure every hour until regurgitation ceases and the gastrium recovers its tone, even, if it is necessary, for a period of a day or two. The Ewald tube is used in nearly all cases for lavage, but after gastric resections, gastroenterostomies and other gastric work, any possibility of perforation of the suture line may be removed by the use of the Rehfuss tube. It is our opinion that the stomach tube is not used often enough rather than too frequently. Performing a gastric lavage is a repulsive procedure both to the operator and to the patient, but the subsequent relief is more than sufficient to recompense for that. Undoubtedly, it is preferable to do many unnecessary gastric evacuations than to lose a single patient by neglecting this relatively benign measure.

Blood transfusion has been mentioned earlier in this paper, but it is of sufficient importance to warrant further discussion. In certain cases of shock and hemorrhage, particularly in cases

of ruptured ectopic pregnancy, gun-shot wounds of the abdomen, and ruptured viscera, blood transfusions may be considered as a life saving measure. Like gastric lavages, blood transfusions are done to infrequently. Blood transfusion necessitates a donor, requires careful typing, and preferably, requires a mayor surgical set up. Because of the expense to the patient and of the difficulties to obtain donors, transfusions are occasionally omitted even when we know it would be to the patient's decided advantage to have 400 or 500 cc. of blood. The citrate method is usually used on our service because of ease of administration and probable less danger. However, there are some who believe that the whole blood transfusion is better when properly done. Any procedure that is to be used frequently on a large number of cases must have simplicity and safety as its prime essentials, consequently our choice of the citrate method. Blood transfusions do the most good if given early on definite indications, but are useless or even disastrous if given when the patient is moribund.

In a series of abdominal operations, any surgeon may expect to encounter a certain number of suppurative cases in his work. In these so-called pus cases either of the peritoneum, or of the abdominal wall, or both, drainage is essential after the operation. Elevation of the head of the bed is imperative, particularly in cases of generalized peritonitis. In addition to the position of the patient, hot dressings or other forms of heat are a valuable adjunct in their treatment. Hot boric or hot sterile water dressings should be used to promote drainage and localization in cases of suppuration. However, hot dressings carry the danger of maceration to the wound if applied over an extended period. It is our opinion that hot fomentations should not be applied for more than 24 hours without interruption, and in our experience the maximum benefit is obtained by applying wet and dry dressings on alternate 12 hour periods. The heat can still be applied with dry dressings by use of the hot water bottle or the electric pad over the dressings. In suppurative cases all dressings by the interne are handled by the man on minor surgery so that the interne assisting at the operations is not a possible source of infection to the clean patients. In certain pus cases, it has been found that the judicious use of infra red units or of the mercury quartz lamp have a definite effect in shortening the period of convalesence. Any method that may be safely used to decrease the period of hospitalization in these cases, certainly should be employed. Hot applications to the abdomen either moist or dry, are a decided help in combating the occasional case of paralytic ileus also. In addition to stupes and enemas to combat any tendency to intestinal stasis, it is necessary, occasionally to try pituitrin hypodermically. Pituitrin can be given safely in practically every case in which the continuity of the bowel has not been disturbed, but its use is absolutely forbidden in cases in which postoperative intestinal obstruction or peritonitis is even suspected. The results from pituitrin are extremely variable, but are so strikingly beneficial occasionally that this drug should be given a trial when indicated.

A troublesome complication that is encountered occasionally is the inability of the patient to void. Caffeine citrate administered orally in 3-5 grain doses every 4 to 6 hours has given good results in a few cases, but cannot be depended upon for constant help. If, after a fair trial of the common physical stimuli, the patient is still unable to micturate, the use of the catheter, even for an extended period, is imperative.

Time will not permit the discussion of medications, diet and drains, but no paper could be considered complete that did not discuss the pulmonary complications. It is this group of misfortunes that is responsible for more surgical deaths than any other cause. Pneumonia, massive collapse, and embolism are a formidable trio, and recovery from these depends to a large extent on the patient's resistence along with appropriate medication. One point in treatment, that is extremely essential, is that embolism requires absolute quite even with morphine, while frequent change of position is necessary in cases of massive collapse and as a prophylactic against pneumonia. There has been much work done in the last few years on the use of carbon dioxide as a prophylactic measure after an anesthetic. Hendersen, Haggard and Coburn have covered this in detail, both experimentally and clinically in the Journal A. M. A. in March, 1920. This is unquestionably the best method that we have available at present for the prophylactic treatment of pulmonary complications, but again a method of this kind is made prohibitive as a routine because of the difficulty of administration. If careful prophylactic measures of fre-

quent change of position, propping up in bed, pneumonia jackets and appropriate medications are used, the dangers of pulmonary complications will be reduced to a minimum.

Now the patient has been operated upon successfully and his comfort and safety have been guarded during the convalescence by appropriate sedatives, fluids, enemas or other special procedures. We have arrived at the time of the patient's discharge from the hospital. The duration of the stay in the hospital is another subject on which there is a wide variation of opinions. However, I will state that none of our abdominal cases are discharged from the hospital before the 10th postoperative day and in uncomplicated cases of pelvic work, gallbladder work, or other extensive procedures, the minimum is 12 days.

In closing I wish to say a word in regard to the instructions given to the patient as to the care of himself after being discharged from the hospital. This is a step that is too frequently neglected with occasional unfortunate results. A word of caution to the patient about going up and down stairs, about lifting, about straining at stool, and about diet will help to avoid any likelihood of trouble and will enhance the operator's reputation as a careful surgeon.

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DISCUSSION

Dr. A. P. Standard, Macomb: I am sure that this paper has opened a subject to which very little attention is paid. Dr. Brown said that there had been very little written upon this particular subject. I think that is true. However, I think the men who have been fortunate enough to be associated with the smaller institutions without a large interne service and who have been compelled to look over the cases and watch the after care, have had more of this work. Personally, I do not think there is any part of the surgical procedure that is more important than the after care. In this connection I think it is impossible to separate the preliminary preparation of the patient for surgical care; in other words, I am of the opinion that a great many of the complications with which we have to contend after surgical operation could be prevented by a proper preliminary preparation of the patient.

You have heard this afternoon a great deal of discussion about the pulmonary complications following surgical procedure. You have also noted that the statement was made that where the patient was properly prepared there was a decided drop in the percentage of cases that suffered from pneumonia following surgical operation. It seems to me that if we would take a little more time before operation; in other words, if we do not send the patient directly from the office after the diagnosis was made in the afternoon and hurriedly operated upon the next morning, that we would have fewer of these complications to take care of. I believe any patient unless it is an emergency should spend two or three days in the hospital under the supervision of the surgeon before he undertakes any surgical procedure. More and more I am insisting that my patients spend forty-eight hours in the hospital before surgical operations.

As to the use of sedative, we should all use a certain amount of sedatives in our work. I believe in the last few years, and perhaps more so in the very near future, we will use less of the so-called narcotics. This change is going to be brought about by a radical change in the method employed for anesthesia. After a local anesthetic the patient who has had a hypnotic of mild type preceding operation will require less morphin in the first few hours. In the past few years I have used small doses of the barbarturic acid group; this reduces the amount of morphin required.

As far as gastric lavage is concerned, I of course agree that there are cases following operation upon the upper abdomen where such procedure is indicated. However, I think these cases are in the minority. The comfort of the patient is the thing we should all consider and do everything in our power to see that the patient is comfortable following any surgical operation.

I think the promiscuous use of adhesive plaster on the abdomen causes any patient to be more or less uncomfortable and can be eliminated.

As to the type of suture materials, tension sutures have a lot to do with the comfort of the patient. I never use silkworm-gut tension sutures because it is hard and uncomfortable. A simple suture of waxed silk applied double the ends being tied over 2 rolls of gauze are much more comfortable and prevents the transverse scars which are always present when tension sutures are tied across the line of incision.

As far as enemas are concerned, I heartily agree with Dr. Brown that enemas should be used in preference to strong cathartics. I have tried all the combinations in enemas and now limit myself to the use of the 1-1 enema, consisting of a pint of water and an ounce of glycerin. I am heartily against irritation at either end of the intestinal tract.

I am sure we all appreciate Dr. Brown's calling our attention to these points which are most important in the handling of any surgical case.

Dr. C. David Brown, Chicago (closing): I am extremely grateful for the consideration the men have

shown in the discussion of my paper. It is one subject about which we can all talk and in which we are interested. If we were to have a round table discussion we would get many different opinions with no definite conclusions as to the most valuable measures. For these reasons I have simply tried to indicate the different procedures used in our work. Dr. Standard brought out the point that the preoperative care is of great importance in the postoperative care. This fact is steadily gaining in its acceptance with the resultant benefit to the patients.

UNITED STATES PUBLIC HEALTH SERVICE PELLAGRA PREVENTIVE VALUE OF CERTAIN CANNED VEGETABLES

The United States Public Health Service has recently completed a study of the pellagra preventive potency of canned spinach, canned turnip greens, mature onions and canned green beans. These studies are of value, as they indicate the efficacy of these vegetables in the prevention of pellagra.

Canned spinach supplies the pellagra-preventive vitamin, but cannot be regarded as especially rich in it. It is, however, considered an important contributory source of this factor. Canned turnip greens supply the pellagra preventive vitamin and, at least in liberal quantity, adequately supplement an otherwise pellagra-producing diet. This substance meets many of the requirements of a practical and effective dietary supplement in the pellagrous sections. The mature onion is a very poor source of the pellagra-preventive vitamin. Canned green beans are, relatively, a poor source of the pellagra-preventive vitamin.

MICROSCOPIC METHOD OF TYPING PNEUMOCOCCI BY USE OF STANDARD ORGANISMS

Royall M. Calder, Durham, N. C. (*Journal A. M. A.*, Sept. 5, 1931), describes a microscopic method of typing pneumococci by the use of stained organisms, in which the organisms are prepared in suspension as for an ordinary macroscopic typing, and a drop is taken up by a capillary pipet and transferred to each of the four cover slips. Another capillary pipet is held for a moment in a bunsen flame to seal its end and bend it into the form of a small hook. This hook is dipped into the gentian violet solution, and the adhering dye is allowed to dry completely. The stain is worked into the drop of bacterial suspension on the cover slips and, as the film of dye on the hook is very thin, the amount mixed with the drop of suspension can be controlled accurately. The amount of dye to be worked into the drop to secure the best staining can be gaged easily after a little experience. If the dye as it comes off the hook spreads unevenly through the drop, a second capillary hook, without stain, can be used to secure an even mixture. The organisms take up the dye selectively and appear as deeply stained bacteria in an unstained or faintly bluish medium. After the drop has been stained, equal volumes of the diluted serums are added by capillary tube and thoroughly mixed with the suspension by means of capillary hooks, care being taken, of course, to use separate stirring rods for each of the various preparations so as not to mix the serums. In the ordinary typing, four hanging drop preparations are set up, one for each of the three fixed types and one without serum for control. The cover slips are inverted over hollow-ground slides, sealed and placed in the shaking machine, where five minutes of shaking usually brings about sufficient agglutination to be read with the 4 mm. objective.

UTERINE HEMORRHAGE IN PELVIC INFLAMMATORY DISEASE

According to C. F. Fluhmann, San Francisco (*Journal A. M. A.*, Sept. 5, 1931), abnormal uterine bleeding is found in from 35 to 50 per cent of all patients with acute or chronic salpingitis. This bleeding may manifest itself clinically in five ways: (1) profuse periods, twenty-eight day cycle; (2) too frequent menses; (3) atypical irregular bleeding; (4) continuous bleeding, the onset coinciding with a normal menstrual period, and (5) a period of bleeding, the onset occurring between the eighth and eighteenth days of the cycle. The most important factors concerned in the production of the bleeding are interference with uterine contractions from adhesions and malpositions; pelvic hyperemia; endometritis; ovarian deficiency induced by chronic perioophoritis and hyperemia, and corpus luteum abscess formation.

Society Proceedings

COOK COUNTY

CHICAGO SOCIETY OF INDUSTRIAL MEDICINE AND SURGERY

Meeting, November 4, 1931

1. "Skeletal Traction in Fractures of Long Bones."
2. "The Present Status of Industrial Medicine and Traumatic Surgery".....Frederic A. Besley

Discussion: 1. William R. Cubbins.
2. Harry Mock.

CHICAGO ROENTGEN SOCIETY

Meeting, November 11, 1931

"Verified Examples of Diseases of Bone and Benign and Malignant Tumors of Bone in Which It Has Been Ten Years or More Since the First Treatment" (Lantern Slide Demonstration).....
.....Dr. Joseph Colt Bloodgood, Johns Hopkins University, Baltimore, Md.

CHICAGO MEDICAL SOCIETY

Joint Meeting with the Chicago Heart Association
Wednesday, November 18, 1931

"Silent Endocarditis".....Don Sutton
"Age as a Factor in Cardiac Diagnosis".....
.....Robert B. Preble
"Rheumatic Heart Disease in Children".....
.....Harrold Bachmann
"A Study of the Clinical and Electrocardiographic Effects of a Glucoside of Squill"...Chauncy Maher

CHICAGO UROLOGICAL SOCIETY

Meeting, Wednesday, November 25, 1931

"Fibrolipomatosis of the Kidney." Report of a Case .....Herman L. Kretschmer and L. E. Pierson, Sioux City, Ia. (By invitation)

"Skin Metastases in Carcinoma of the Bladder"... Harry C. Rolnick and C. P. O'Neill (By invitation)

"A Spontaneously Expanding Bougie for Ureteral Dilatation.....Ben Earl Fillis

A table will be reserved in the Dining Room of the Medical and Dental Arts Club, at 6:30 P. M., for members and guests desiring to have dinner before the meeting.

The Clinical Meeting will be held at the University of Illinois Research Hospital, 1817 W. Polk Street, Wednesday morning at 9 o'clock.

Alfred E. Jones, Pres. L. L. Veseen, Secy.

OGLE COUNTY

The Medical Society of Ogle County met at the Lincoln Hospital at Rochelle on the evening of November 12, 1931.

Election of officers resulted as follows: President, C. H. Schaller, Rochelle; vice-president, R. O. Brown, Mt. Morris; secretary-treasurer, A. R. Bogue, Rochelle; censor for three years, Joe Kennedy Deterick, Rochelle; delegate, W. E. Kittler, Rochelle; alternate delegate, A. R. Bogue, Rochelle.

Miss Swenson, Ogle County nurse, presented maternity pre-natal nursing program. Program was endorsed by the Society.

Dr. H. J. Stengel, Mt. Morris, was elected to membership.

Moved by Dr. Kittler a commtitee be appointed to offer resolutions on the death of Dr. Thomson.

Members stood in silent prayer for one minute.

Moved by Dr. Kittler a committee be appointed to report and visit the sick members. Seconded and passed by the society.

Dr. Beveridge appointed Drs. Kittler, Brown and Warmolts.

A motion passed for the secretary to extend a letter of sympathy to Dr. R. R. Ferguson, of Chicago, on his recent illness.

Following the business meeting Dr. Roswell Pettit, of Ottawa, gave a very able dissertation on the present treatment of carcinoma.

Particularly instructive was the progress in results accomplished in the past decade.

Drs. Weld and Murphy concurred with Dr. Pettit in their discussion. One case was shown of two and one-half year duration with very decided improvement following treatment.

Following Dr. Pettit a still more encouraging discourse was given on the subject of tuberculosis. Major points to be considered in the treatment of tuberculosis was his subject. The subject was interestingly and freely discussed by the visitors and members. Nine members and twelve visitors were present.

A. R. Bogue, Secy.

Marriages

CASIMIR ARTHUR CYWINSKI to Miss Loretta Lucille Konopa, both of Chicago, November 14.

HERMAN H. MAI, Chicago, to Mrs. Bertha Eckert, September 18.

WILLIAM MCCULLOCH TUTTLE to Miss Geneva Duvall, both of Chicago, September 19.

CLARK LEE SHIPLEY, Paris, Ill., to Miss Veronica McCormick of Ambia, Ind., in Terre Haute, July 15.

Personals

Dr. Samuel M. Feinberg, Chicago, addressed the Will-Grundy Medical Society at Joliet, November 4, on allergy.

Dr. Walter L. Palmer, Chicago, addressed the Peoria City Medical Society, November 3, on "Peptic Ulcer: Experimental and Clinical Considerations."

The Madison County Medical Society was addressed, November 6, by Dr. Leland B. Alford, St. Louis, on "Treatment of the Common Neuroses."

Dr. Julian H. Lewis spoke on "Antigenic Relationship of the Lipoids from Brain and Testicles" at the November 9 meeting of the Chicago Pathological Society.

Dr. Clifford J. Barborka, Rochester, Minn., addressed the Peoria City Medical Society, November 13, on "Relation of Diet to Health and Disease."

The Knox County Physician's Club was addressed by Dr. Aaron Arkin, Chicago, November 10, on "Pulmonary Diseases and Their Differential Diagnosis."

The Bureau County Medical Society was addressed, November 10, by Drs. Leon Unger and Edward A. Oliver, Chicago, on "Allergy" and "Practical Points in Dermatology," respectively.

Dr. Allen B. Kanavel addressed the Medical History Club of the University of Illinois College of Medicine, November 4, on "The Value of Medical History to the Student of Medicine."

A symposium on salpingitis was conducted before the Adams County Medical Society, November 9, by Drs. Frank Cohen, Earl L. Caddick and Henry J. Jurgens, all of Quincy, and John F. Ross, Golden.

The members of the Lake County Medical Society were the guests of the medical staff of the

U. S. Naval Hospital at Great Lakes, November 4; Lieut. Comdr. Morton D. Willcutts spoke on "Local Anesthesia."

Dr. Clarence M. Hincks, director, National Committee for Mental Hygiene, will address the annual meeting of the Illinois Society for Mental Hygiene, December 4, at the Chicago Woman's Club.

Dr. John E. Reed, Benton, was elected president of the Southern Illinois Medical Association at its annual meeting in Olney, November 5-6. The next session will be held in Carbondale.

The Chicago Society of Allergy was addressed, November 16, by Drs. Benjamin Z. Rappaport and Tell Nelson on "Effect of Air Filtration on Pollen Hay Fever and Asthma," and C. E. Barrett, "Atmospheric Pollen Studies."

The Chicago Gynecological Society was addressed, November 20, by Dr. William J. Dieckmann, St. Louis, on "Blood Volume Changes in Eclampsia," and Dr. Irving F. Stein and Miss Elizabeth Cope, "Trichomonas Vaginalis."

A symposium on prediction methods in criminology featured the meeting of the Chicago Academy of Criminology, November 12; the speakers were Ernest W. Burgess, Ph. D., and Clark A. Tibbits of the University of Chicago, and Dr. John A. Larson of the Institute for Juvenile Research.

Max Poser, Ph. D., Rochester, N. Y. addressed the Chicago Ophthalmological Society, November 16, on "Importance of Elimination of Astigmatism in Oblique Pencils and the Character of the Various Types of Corrected Lenses Pertaining to This Subject" and Dr. Theodore M. Shapira, "Heteroplastic Ossification. A Report of Two Cases of Bone Formation in the Choroid."

Doctor R. W. McNealy addressed the Academy of Medicine, Terre Haute, Ind., on "Blood Vessel Surgery, Past and Present," November 6, 1931.

Dr. Tom A. Williams of Washington has removed to the Esplanade, Miami Beach, Fla.

Dr. Melbourne Mabee (Northwestern, 1911), director of the Postgraduate Hospital gynecological clinic since 1919, resigned from that post on November 15 to become associated with the surgical division of the Santa Ana Clinic, of Santa Ana, California, of which Dr. Frank H. Paterson is the president.

News Notes

—The fifty-seventh annual meeting of the Southern Illinois Medical Association was addressed in Olney, November 5-6, among others, by Drs. Louis R. Wayman, Murphysboro, on "Appendicitis in Childhood"; Charles A. Elliott, Chicago, "Management of Edema"; Robert F. Lischer, Mascoutah, "The Social Evil," and Millard F. Arbuckle, St. Louis, "Diagnosis of Acute Mastoiditis in the Absence of the Classical Signs and Symptoms."

—At the Annual meeting and Clinic of the Chicago Dental Society, January 18-21, 1932, Dr. John A. Higgins, of the Department of Pharmacology, University of Illinois College of Medicine, will give a clinic on "Local Anesthetics and Hypnotics—Used in Dentistry," on January 18, at 2 o'clock.

—Dr. Amante Rongetti began his sentence in the United States Penitentiary at Leavenworth, Kan., October 17, having been found guilty of violation of the Harrison Narcotic Act and sentenced, October 2, to serve three years in prison. The U. S. Supreme Court, October 26, denied the plea of Dr. Rongetti for a review of the Illinois Supreme Court's decision affirming his conviction on a charge of manslaughter, according to press reports. Rongetti was sentenced, Aug. 12, 1930, to imprisonment from one to fourteen years for manslaughter on a charge of causing a death by an illegal operation. In his first trial, Rongetti was sentenced to death. When the supreme court granted a new trial, he was found guilty of manslaughter. The recent decision of the U. S. Supreme Court is the result of Dr. Rongetti's appeal, it is reported.

—Memorial Exercises for the late Dr. D. A. K. Steele, one of the founders of the College of Physicians and Surgeons of Chicago, afterwards the College of Medicine of the University of Illinois, will be held in the Assembly Hall, Room 106, in the new Medical and Dental Laboratory Building of the University of Illinois, 1853 West Polk Street, on Thursday, December 11, at 4 P. M.

For many years, Dr. Steele was President of the Corporation of the College of Physicians and Surgeons, and Head of the Department of Surgery in the College of Medicine of the University

of Illinois. He was Dean of the Faculty from 1914 to 1917. Dr. Steele died July 19, 1931 at his home in Sarasota, Florida.

President Harry W. Chase of the University of Illinois will preside, and the speakers will be Dr. William M. Harsha, Dr. Edward Louis Heintz, and Mr. William H. Browne; Catherine Eleanor Browne Kramer will sing.

Deaths

HARRY E. BECKER, Quincy, Ill.; Hahnemann Medical College and Hospital, Chicago, 1905; member of the Illinois and State Medical Society; aged 62; died, October 25, of cerebral hemorrhage.

FRANK C. CAMPBELL, Xenia, Ill.; University of Louisville, Medical Department, 1896; aged 59; died, May 9, following an operation for gall stones, at Olney Sanitarium.

JAMES E. COWAN, Galesburg, Ill.; Rush Medical College, 1874; former member of Illinois State Medical Society; aged 82; died, November 10, of myocarditis.

CHARLES M. HENN, Chicago; Hahnemann Medical College and Hospital, Chicago, 1890; aged 82; died, October 10, of myocarditis, endocarditis and cardiac asthma.

LEONARD JONATHAN HENSLER, Carrollton, Ill.; Vanderbilt University School of Medicine, Nashville, 1908; aged 46; a Fellow, A. M. A.; died, May 7, at St. Anthony's Hospital, St. Louis, Mo.

JOHN ALEXANDER KINLOCH, Chicago; L. R. C. P., Edinburgh, L. R. C. S., Edinburgh, and L. R. F. P. S., Glasgow, 1886; McGill University Faculty of Medicine, Montreal, Que., Canada, 1886; aged 70; died, in October, at Montreal.

SAMUEL WESTBROOK LATHAM, Eldorado, Ill.; Missouri College of Medicine and Science, 1901; a former member of Illinois State Medical Society; mayor of Eldorado several terms and State senator; aged 52; died, November 1, from injuries caused by a fall.

ROY B. LEACH, Joliet, Ill.; Rush Medical College, 1901; a Fellow, A. M. A., and former president of Will County Medical Society; on staffs of St. Joseph's and Silver Cross hospitals; aged 55; died, November 1, in Silver Cross hospital after a long illness.

JOSEPH J. LUMPP, Chicago; Bennett College of Eclectic Medicine and Surgery, Chicago, 1901; aged 52; died, September 3, in the Cook County Hospital, of pulmonary tuberculosis and chronic myocarditis.

CHARLES MACDONALD, Oak Park, Ill.; Rush Medical College, Chicago, 1900; a Fellow, A. M. A.; member of the American College of Surgeons; on the staff of the Jackson Park Hospital, Chicago; aged 60; died October 31, of acute nephritis, lobar pneumonia and thrombophelibitis.

JAMES J. MCGUINN, Chicago; College of Physicians and Surgeons of Chicago, School of Medicine of the University of Illinois, 1901; member of the Illinois State Medical Society, and the American College of Surgeons; chief of staff of the John B. Murphy Hospital; aged 57; died, October 31, of intestinal obstruction.

HARRIET M. OWENS, Princeton, Ill.; Woman's Medical College of Pennsylvania, Philadelphia, 1892; aged 59; died, August 8, in the Seaside Hospital, Long Beach, Calif., of bronchial asthma and bronchopneumonia.

FRED DUNHAM PRATZ, Moweaqua, Ill.; College of Physicians and Surgeons of Chicago, School of Medicine of the University of Illinois, 1898; a Fellow, A. M. A.; aged 61; died, October 23, of heart disease.

WALTER FORBYCE REYNOLDS, Barry, Ill.; St. Louis College of Physicians and Surgeons, 1893; Jefferson Medical College of Philadelphia, 1894; member of the Illinois State Medical Society; aged 59; died, October 31, in St. Mary's Hospital, Quincy, following an operation for gallstones and appendicitis.

DANIEL WESTON ROGERS, Highland Park, Ill.; Northwestern University Medical School, Chicago, 1894; a Fellow, A. M. A.; formerly president of the board of health, Highland Park; aged 65; died, October 30, in the Highland Park Hospital, of carcinoma of the pancreas.

JOSEPH XAVIER RYAN, Chicago; Loyola University Medical School, 1924; aged 31; died, November 23, from tetanus from an infected blister on leg.

GEORGE STEELY, Danville, Ill.; College of Physicians and Surgeons, Boston, 1905; a member of Illinois State Medical Society; veteran of the World War; aged 52; died, November 14, following an operation for appendicitis.

STEWART CRAIG THOMSON, Byron, Ill.; Wisconsin College of Physicians and Surgeons, Milwaukee, 1897; member of the Illinois State Medical Society; mayor of Byron; aged 61; died, October 30, in a hospital at Rockford, of injuries received when the automobile in which he was driving was struck by a train.

GEORGE WASHINGTON WEBSTER, Chicago; Chicago Medical College, 1882; a Fellow, A. M. A.; at one time professor of physical diagnosis, clinical medicine and internal medicine at his alma mater; past president of the Illinois State Board of Health; formerly on the staffs of the Wesley Memorial Hospital and the Mercy Hospital; aged 74; died, November 7, in Rochester, Minn., following an operation for carcinoma of the sigmoid.

FRANK WORDEN, Alton, Ill.; St. Louis Medical College, 1876; aged 77; died, August 19, of cerebral arteriosclerosis.

CORRECTION

Dr. George Washington Campbell Is Not Dead

The report of the death of Dr. George Washington Campbell of Flora, Ill., in The August JOURNAL was erroneous. The decedent was Frank C. Campbell of Xenia.